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Evaluation of Smoking Cessation Services in Ireland: Design and Pilot of a Smoking Cessation Treatment Database

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***Evaluation of Smoking Cessation Services in
Ireland: Design and pilot of a smoking cessation
treatment database.***



**A thesis submitted to the School of Physics, Dublin Institute of
Technology as a requirement for the award of Masters in Philosophy.**

(MPhil)

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August 2012

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ABSTRACT

A reduction in tobacco use is one of the stated aims of the National Health Promotion Strategy (2000-2005) (Department of Health and Children, 2000a) as well being the core activity of membership for all health promoting hospitals (HPH).

AIMS OF THE STUDY

1. To develop a database of smoking cessation services in Ireland.
2. Do a census of the smoking cessation services in Ireland and evaluate the range and availability of them.
3. Develop a database for use in smoking cessation treatment services which would schedule consultations with patients and gather all relevant demographics, treatments and their outcomes, (cessation treatment database) and pilot its use over a 3 month period.
4. Conduct a patient satisfaction survey of the service users.

RESEARCH METHODS:

1. The database of services was compiled from existing information supplemented by further enquiry and validation. It was then used as the population base for a survey of services using a specially developed, structured self-administered questionnaire which was completed by the smoking cessation service providers identified from the database.
2. Having developed an “Excel” based smoking cessation treatment database, workshops were held around the country and used to further develop and demonstrate it. At these workshops smoking cessation service providers were encouraged to (SPs) into pilot its use for a 3 month period. Data on patients was entered into the database by SPs during the 3 month pilot and was subsequently analysed.
3. A patient satisfaction survey was also carried out during this 3 month period using a custom built survey instrument with the cooperation of the SPs.

FINDINGS:

1. A database of 93 smoking cessation service providers was established.
2. The subsequent census done found that all SPs had some specific training in smoking cessation, more than 2 years' experience and are employing evidence based interventions.
3. Of the 93 SPs identified 49 agreed to take part in the 3 month pilot of the cessation treatment database. Completed treatment databases were received from 41 of the SPs into which 1490 patients were entered. 400 patients reported smoking less than 20 per day, while 1036 patients reported smoking more than 20 per day. Higher cigarette consumption did not demonstrate any statistically significant difference in quit rates either at 4 weeks (37%) or at 3 months (22.4%). Socio-economic (SE) groups 1-3 demonstrated quit rates of 41% at 4 weeks and 28% at 3 months while SE groups 4-6 demonstrated quit rates of 39% at 4 weeks and 23% at 3 months making social class statistically associated with quit rates. Patient status (whether treated as an in-patient/out-patient or in the community) was statistically significant at 4 weeks ($P < 0.05$) but not at 3 months in the case of inpatients the quit rate fell from 40% at 4 weeks to 24% at 3 months.
4. A total of 342 patient satisfaction questionnaires were received and these demonstrated that less than 7% of the patients had to wait for more than 4 weeks for an appointment and almost all (94%) were satisfied and would be happy to return to the service.

CONCLUSIONS:

Database of cessation service providers

No up to date comprehensive database of service providers existed and there was no circulation to health professionals of contacts to aid referrals.

Census of smoking cessation services

There is a need for services in psychiatric settings, for standardised follow up of patients and training 61% identified need for further training. There was poor data collection, 32% of SPs do not have access to a PC and poor use is being made of the data they do collect.

Treatment Database

Quit rates of 37% at 4 weeks and 22.4% at 3 months of all those entered into the database. There were low quit rates in pregnant women at 16.5% and consistently poor outcomes in vulnerable populations. There were low referrals from outside cessation services.

Patient Satisfaction Questionnaire

Patients preferred time of appointment was weekday mornings. Prescription cost did not deter their participation in the treatment programme. 94% Patients were very happy with service and would be happy to return.

Declaration:

I hereby certify that the material which is submitted in this thesis as a requirement for the award of Masters in Philosophy. (MPhil) is entirely my own work and has not been taken from the work of others, save and to the extent that such work has been cited and acknowledged within the text of my work.

This thesis was prepared according to the regulations for postgraduate study by research of the Dublin Institute of Technology and has not been submitted in whole or in part for another award in any other third level institution.

The work reported on in this thesis conforms to the principles and requirements of the DIT's guidelines for ethics in research.

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Signature of candidate: _____,

Date: _____

Acknowledgements:

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Abbreviations

WHO	World Health Organisation
EU	European Union
CO	Carbon Monoxide
PPM	Parts Per Million
FCTC	Framework Convention on Tobacco Control
IHPH	Irish Health Promoting Hospitals
HPH	Health Promoting Hospitals
COPD	Chronic Obstructive Airways Disease
DOHC	Department of Health and Children
IARC	International Agency for Research on Cancer
SHS:	Second Hand Smoke
OTC	Office of Tobacco Control
SE	Socio Economic
SPs	Service providers
CP	Cessation Programme
SCS	Smoking Cessation Service
NRT	Nicotine Replacement Therapy
ETS:	Environmental Tobacco Smoke
GP:	General Practitioner
PM:	Particulate Matter
SIDS:	Sudden Infant Death Syndrome
TFRI:	TobaccoFree Research Institute Ireland

ENSP	European Network for Smoking and Tobacco Prevention
NICE	National Institute of Clinical Excellence
ECHP	European Community Household Panel
PESCE	General Practitioners and the Economics of Smoking Cessation in Europe
eSCCAN	European Smoking Cessation Clinic Assessment
EQUIPP	Europe Quitting and Progress Report
SJH/AMNCH	St James's Hospital, Adelaide Meath and National Children's Hospital
Odds Ratio	The odds ratio is used to determine whether a particular exposure is a risk factor for a particular outcome, and to compare the magnitude of various risk factors for that outcome.

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CHAPTER 1 BACKGROUND ON TOBACCO AND SMOKING CESSATION

1.1 Background

Tobacco use is a major preventable cause of death and chronic disability in Ireland today and a major cause of health inequality. Tobacco use is a major killer: in Ireland between the years of 1950 – 2000 approximately 235,000 were attributed to it. Half of them died in middle age (35-69yrs) and many of those killed in middle age would have lived on for 10, 20, 30 or more good years. About 22 years of life are lost, by those killed in middle age by smoking (2006 www.deathsfromsmoking.net).

The strategic aim of the National Health Promotion Strategy 2000/2005 was to increase the percentage of the population who remain non-smokers with a particular emphasis on narrowing the gap across social classes and to protect non-smokers from passive smoke. Its objectives were to develop, implement and evaluate models of best practice in smoking cessation for lower socio-economic groups (Department of Health and Children, 2000). The review of the National Health Promotion Strategy 2004, noted that additional work was needed to develop and disseminate national guidelines for smoking cessation training (Department of Health Promotion et al., 2004).

Early development of smoking cessation services in Ireland occurred within the acute hospital sector, as part of HPH membership with little funding. Momentum was gained following the publication of the National Cardiovascular Strategy. This strategy called for the provision and access to smoking cessation services countrywide and allocated funding for this development (Department of Health and Children, 1999). Unfortunately this development was never fully realised. In 2003, further impetus was gained when the availability of smoking cessation services countrywide was seen as a key national strategy developed in conjunction with the introduction of the 2004 smoking ban in Ireland.

Smoking prevalence has been decreasing since the 1980's. The most up to date national rate is 24% (OTC et al., 2010), but the rate of decrease has been slowing since the mid-1990s. However, rates of tobacco use are increasing in young women and in people from lower socio-economic groups (Kelleher et al., 2003) (Layte and Whelan, 2004).

Environmental tobacco smoke has also been linked with lung cancer in non-smokers (Hackshaw et al., 1997). The use of tobacco during pregnancy is one of the most important risk factors for neonatal and late foetal deaths (Doll et al., 1994).

Smoking rates among women are increasing whereas among young men they are decreasing (HBSC 2001/02). The 1998 European Community Household Panel (ECHP) survey found that young Irish women (aged 16-24) had prevalence rates of 35% (2nd highest of the 11 countries) for those with “low” educational attainment compared to 24% for those with “high” educational attainment (Commission and Group, 1998). The 2000 ECHP found that there have actually been increases in smoking among lower income and lower social class groups. Smoking among manual working class groups are twice those of professional and managerial groups (European Commission and Group, 2000). The fact that many studies show that smoking is more prevalent in the lower socio-economic groups suggests that these are the groups that tobacco control policies should especially focus on.

Tobacco is a highly addictive substance and the difficulties associated with quitting are well documented. In 1988 a report by the US Surgeon General identified cigarette smoking as nicotine addiction (General, 1988). Cigarette smoking is a chronic relapsing disease and has been classified as a mental and behavioural disorder according to the WHO International Classification of Diseases, ICD-10 (F17.228). The most important component of daily smoking is nicotine dependence and most people need to attempt quitting several times before they are successful (WHO, 1997). Smoking cessation services are an invaluable resource for smokers who wish to quit, as it is very difficult to stop smoking without help and about 90% who try will be smoking again 6 months later (Bandolier,

2008). Smoking cessation services can help smokers to quit their smoking habit which in turn will help to reduce smoking prevalence. This will lead to the improvement of health status; reduce morbidity, and premature mortality in the population. Disease risks are reduced following smoking cessation and those smokers who stop before middle age can avoid most of the excess risk they would have suffered (Doll et al., 1994). Cessation of smoking at any age is associated with risk reduction. Helping smokers stop can be provided in different ways through brief interventions, behavioural therapy, self-help materials, and pharmacotherapies. There is evidence that these are effective and improve long term quit rates (Hughes et al., 2004). Most smokers want to stop but their chances of success are low unless they are offered support and treatment. Brief advice, pharmacotherapies and more intensive behavioural support have all been shown to increase a smoker's chance of stopping (Raw et al., 1999).

In 2001, the World Health Organisation highlighted that the provision of smoking cessation services for adults could bring about quicker health gains than a complete focus on preventing people from starting to smoke. Tobacco continues to kill nearly 6 million people each year, including more than 600,000 non-smokers who die from exposure to tobacco smoke. Up to half of the world's 1 billion smokers will eventually die of a tobacco-related disease (WHO, 2011).

Total tobacco-attributable deaths are projected to rise from 5.4 million in 2005 to 6.4 million in 2015 and 8.3 million in 2030 (Mathers and Loncar, 2006), unless more effective measures are introduced to help smokers to stop smoking or at least reduce their tobacco consumption.

The Warsaw Declaration for a Tobacco-Free Europe, 19 February 2002, acknowledged that tobacco is a toxic and addictive substance and that the tobacco epidemic is one of the greatest public health challenges facing the World Health Organisation's (WHO) European region. It was also emphasized that smoking cessation strongly contributes to a decrease in smoking prevalence (WHO, 2002). It is clear from previous Cochrane reviews that both simple advice and nicotine replacement therapy can improve the chances of quitting in some patients (Silagy et al., 2004) (Lancaster and Stead, 2004) and should form part of a primary care strategy for smoking cessation.

Behavioural strategies to aid smoking cessation range from very brief interventions, such as advice from a physician, to intensive multi-component programmes. There is good evidence for the effectiveness of brief, therapist-delivered interventions, such as physician advice (Lancaster and Stead, 2004), and for the additional effect of more intensive behavioural interventions, such as group therapy, (Stead and Lancaster, 2005) individual counselling (Lancaster and Stead, 2005) and telephone counselling (Stead et al., 2003). Most successful quitters give up on their own (Hatziaandreu et al., 1990). Existing evidence was summarised for both the older and newer forms of self-help interventions in promoting smoking cessation and found that providing smokers with materials to support quit attempts is of limited benefit unless the materials take into account each smoker's individual characteristics (Lancaster and Stead 2005).

It was found that training health professionals to provide smoking cessation interventions (to ask people if they smoke and offering them advice) had a measurable effect on

professional performance (trained persons were more likely to perform tasks of smoking cessation than untrained controls) but did not find strong evidence that it changed smoking behaviour (Lancaster et al., 2000). Having smoking cessation programmes in pregnancy was found to reduce the proportion of women that continue to smoke, and reduce low birth weight and preterm birth (Lumley et al., 2009). Advice and support from nurses may help people to stop smoking, especially when they are in hospital (Rice and Stead, 2004). High intensity behavioural interventions that include at least one month of follow-up contact are effective in promoting smoking cessation in hospitalised patients (Rigotti et al., 2007). Smoking related mortality is likely to rise substantially unless effective interventions are put in place to reduce smoking prevalence (Ezzati and Lopez, 2003). Unfortunately, training of health professionals in smoking cessation services is inadequate in Europe (Kabir et al., 2011).

Smoking cessation interventions are effective both in terms of cost and outcome. Research evidence shows that there are highly cost-effective ways to help people stop smoking (Christenhusz et al., 2011). The potential savings to the drugs bill if more smokers stop is considerable. Quitting smoking can eliminate the need for cholesterol-lowering medication (statins) and result in significant cost savings (Nicklas et al., 1999). Smoking cessation interventions are about 17 times more cost effective than statins (McNeill A, 2000).

1.2 Development of cessation services in Ireland

Through the 'Europe against Cancer' programme failed to achieve its target of reducing cancer deaths by 15% by the year 2000 and as a result of this failure the European

Community has set as one of its objectives reducing the number of cases of cancer and other diseases related to smoking by stating that renewed tobacco control efforts are needed along with increased screening.

The EU Council recommendations on prevention of smoking and on initiatives to improve tobacco control, 2002, recommends that member states continue developing strategies and measures to reduce the prevalence of smoking, such as general programmes to overcome tobacco addiction. Article 14 of the Framework Convention on Tobacco Control (FCTC) requires Parties to “include diagnosis and treatment of tobacco dependence and counselling services on cessation of tobacco use, in national health and education programmes, plans and strategies” and to “develop and disseminate appropriate, comprehensive and integrated guidelines” in order to take “effective measures to promote cessation of tobacco use and adequate treatment for tobacco dependence”.

By ratifying the WHO Framework Convention on Tobacco Control (FCTC), Ireland has agreed to develop and disseminate appropriate, comprehensive and integrated guidelines based on scientific evidence and best practices and to take effective measures to promote cessation of tobacco use and adequate treatment for tobacco dependence. In addition Ireland has agreed to design and implement effective programmes aimed at promoting the cessation of tobacco use.

In June 2001 the WHO Tobacco Free initiative developed policy recommendations for smoking cessation and treatment of tobacco dependence. These were published in June

2003 and launched during the 12th World Conference on Tobacco or Health in Helsinki, Finland. The recommended framework includes a mix of three main strategies:

(WHO, 2003a).

1. A public health approach that seeks to change the social climate and promote a supportive environment;
2. A health systems approach that focuses on promoting and integrating clinical best practices (behavioural and pharmacological) which help tobacco-dependent consumers increase their chance of quitting successfully.
3. A surveillance, research and information approach that promotes the exchange of information and knowledge so as to increase awareness of the need to change social norms.

In Ireland ‘Towards a Tobacco Free Society’, a report of the Tobacco Free Policy Review Group has as one of its key targets to significantly increase the number of people who stop smoking each year and to systematically evaluate services provided with a view to promoting best practice (Department of Health and Children, 2000b).

A key method of achieving this target is the provision of cessation programmes to assist smokers to quit. The Minister for Health and Children launched the National Smoking Cessation campaign, ‘Every Cigarette is Doing You Damage’ in November 2003 and the Health Service Executive (HSE) recently launched a campaign in June 2011 ‘You can Quit’. Smoking cessation services are available free of charge throughout Ireland and are provided in both community and hospital settings. Different types of services exist and are provided by health care professionals from different disciplines and community workers.

Key objectives of Ireland's National Health Strategy "Quality and Fairness: A Health System for You" (Department of Health and Children, 2001) included intensifying the promotion of health and well-being, reducing health inequalities and developing evidence and strategic objectives to underpin all planning and decision-making. It also stated that a reduction in smoking will continue to be targeted through Government fiscal policies.

The National Health Information Strategy advocates the establishment of processes that ensure the fuller use of health information in policy making, service planning, implementation processes, and health information standards that ensure the quality and comparability of health information. It points out that information is needed on the effectiveness of health promotion, protection and intervention initiatives (Department of Health Promotion et al., 2004).

The National Cancer, Cardiovascular and Health Promotion Strategies and the report of the Task Force on Sudden Cardiac Death (2006), emphasise the importance of reducing the prevalence of smoking in order to improve health status and reduce premature mortality (DOHC, 2006).

1.3 Smoking cessation

At any given time four out of five smokers would like to quit smoking. Two thirds of smokers have tried quitting at some stage. For those who quit unaided there is less than a

5% chance of being abstinent after one year (WHO, 1997). Smokers go through a quitting process which may include some or all of the following:

- thinking about quitting,
- planning to quit,
- attempting to quit,
- remaining abstinent,
- going back to smoking.

This cycle may be repeated many times. Smoking cessation intervention and treatment aids have been shown to significantly increase the number of successful quit attempts. Cessation programmes can provide either psychological and behavioural support and or provision of pharmacological aids. Such programmes can be administered through a variety of primary, secondary, and community care facilities.

Tobacco control legislation enables the government to implement and direct policies, set tobacco prices and taxes, ban advertisement and sponsorship, and instigate mass public education campaigns.

It was known that while services are available in all of the four Health Service Executive (HSE) regions, it would appear that there is little uniformity or consistency countrywide in the delivery of these services. In some regions, single services are expected to effectively cover extremely large geographical areas while others are limited to very small community based areas or to single hospital catchment areas. While full-time dedicated staff are

available to provide services in some regions, in other regions the service is provided on a part-time or voluntary basis only. In many cases, services appear to be very limited and patchy and access is focused towards specific population groups, for example, cardiac or respiratory patients.

The Irish Health Promoting Hospital Network (IHPH) managers of smoking cessation services as well as the service providers themselves had previously suggested that there is no systematic follow up, and current review and evaluation is dependent on local resources. At present there is no national structure in place to assist in this process and consequently no collation of local findings that could assist with an adequate review on the value and effectiveness of current smoking cessation services. This information is crucial if Irish health service planners are to have the necessary information that can ensure the integration of cessation services into an improved quality healthcare, one that can adequately respond to the challenge of reducing tobacco use which is already known as the single most important public policy action that will bring about significant health gains.

Since the development of the Health Promoting Hospital (HPH)-Smoke Free Hospital Initiative in 1999 dialogue and discussion has taken place around the issue and developmental needs of smoking cessation services, primarily those within the hospital setting.

HPH Coordinators and Smoking Cessation Facilitators meet regularly to share and make recommendations. Since 2002, the need for standardised guidelines for cessation services was identified, as was the need for a national data collection system.

In 2005, HPH Smoking Cessation facilitators identified the fact that there was no central data collection and storage system, which could help in evaluation of the service with a view to further development and identification of needs of the service.

A number of discussions took place between the Director General of TFRI and the Director of the HPH Network prior to development of a proposal where it was hoped to address these issues. Subsequently meetings took place with the TFRI team and staff involved in smoking cessation and health promotion.

To date in Ireland there has been no comprehensive national study of the availability, appropriateness or effectiveness of smoking cessation services. Smoking cessation services are available throughout Ireland. Different types of services exist, delivered by health care professionals and community workers.

The research planned in this programme will make a significant contribution in improving our understanding of the way smoking cessation services are delivered nationally.

The data generated by this research will enhance evidence based policy which will inform the provision of smoking cessation services in Ireland. Improved planning and delivery of these services will result through identification of standards based on international best practice and the identification of inequalities in service provision. This is in keeping with one of the objectives of our Health Strategy “Quality and Fairness” which advocates an

evidence based approach - National Goal No 4 'High Performance' (Department of Health and Children, 2001).

Chapter 2 outlines the health effects of smoking tobacco and the reasons behind the government's plan to significantly increase the numbers who stop smoking each year and to systematically evaluate services provided.

Chapter 3 outlines treatment of nicotine addiction/dependence, different pharmacological treatments available to aid sufferers quit their addiction as well as the different type of treatment programmes provided. In this chapter I will also discuss typically expected success rates from treatment programmes and how these rates are validated.

Chapter 4 outlines the study methodology of this project.

Chapter 5 presents results of the cessation service database, the census of cessation service provider's questionnaire, results of the 3 month pilot use of the treatment data collection instrument and the patient satisfaction questionnaire.

Chapter 6 discusses the project results.

Chapter 7 discusses study limitations and conclusions of the project.

Chapter 8 shows future recommendations.

CHAPTER 2 HEALTH EFFECTS OF SMOKING TOBACCO AND GOVERNMENT STRATEGY TO INCREASE NUMBERS WHO QUIT ANNUALLY

2.1 Adverse health effects, diseases and deaths caused by tobacco smoke

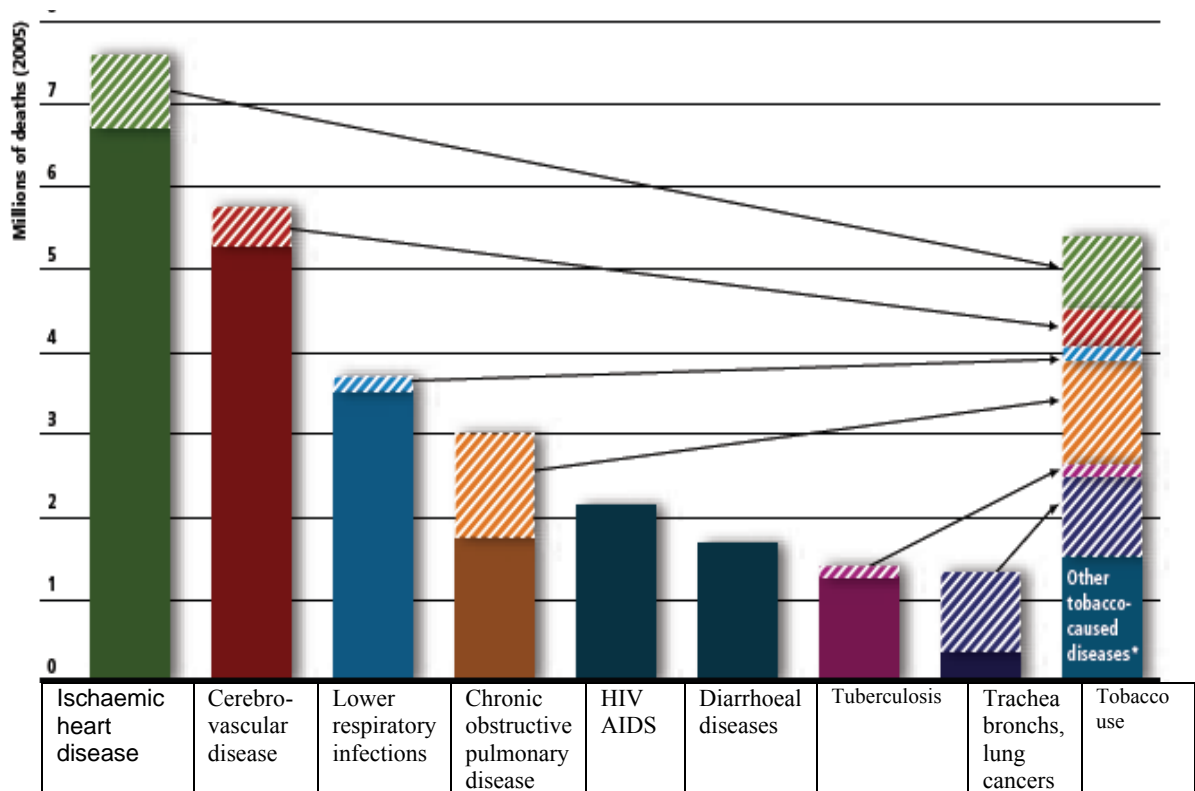
In 1964 the first Surgeon General's report on the adverse health effects from smoking was published. Since then for over 50 years there have been thousands of studies supporting these adverse effects. Tobacco use remains the single most preventable cause of death for both men and women in America (Surgeon General, 2010).

The surgeon general's report states that having looked at the evidence on the mechanisms by which smoking causes disease that there is no risk free level of exposure to tobacco smoke (Surgeon General, 2010).

The WHO estimates that half of the world's children (700 million) are exposed to SHS. Children are especially vulnerable to the effects of SHS as they breathe more rapidly and they inhale more pollutants per pound of body weight than adults. A child exposed to SHS has an increased risk of asthma, lower respiratory infections, bronchitis, middle ear disease, bacterial meningitis and SIDS as well as generally reduced respiratory function (cough, wheezes). Children are more likely to smoke if their parents are smokers. In Ireland 29% of adults still smoke totalling to almost 1 million smokers (Kabir et al., 2011). If w our smoking cessation rates were improved not only would this reduce the burden of disease on the state it would also protect from exposure to secondhand smoke as well as preventing some children from initiating smoking. Reducing the number of smokers in the county is paramount to the health of the nation and in reducing the number of smokers would also improve the health of our children. For example 14.8% (13.9% in young males, 15.4% in young females) of Irish children aged 13-14yrs old were exposed to second hand smoke in cars (Kabir et al., 2009). If there were fewer smokers this would lead to a reduction of exposure to second-hand smoke to children in all areas including confined and enclosed spaces such as cars.

Chronic diseases which result from active and passive smoking impose an enormous burden on our health care system. Figure 2.1 shows the leading causes of death worldwide as well as showing how many millions of them are related to tobacco use in 2005. A cost-effective comprehensive tobacco dependence treatment program can accelerate further declines in smoking rates (Currie et al., 2012).

Figure 2.1 Tobacco use is a risk factor for six of the eight leading causes of death in the world



Hatched areas in figure 2.1 indicate proportions of deaths which are as a result of tobacco use, * includes mouth oropharyngeal cancer, oesophageal cancer, stomach cancer, liver cancer, other cancers as well as cardiovascular diseases other than ischaemic heart disease and cerebrovascular disease (WHO, 2008).

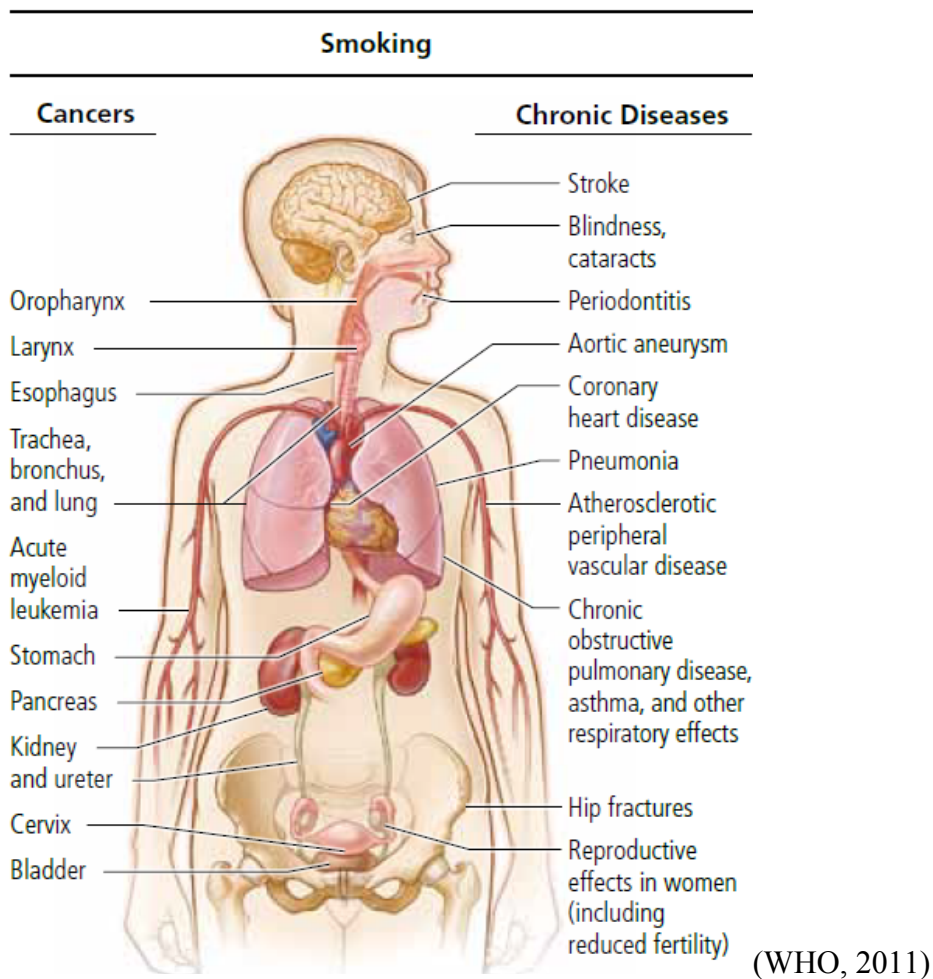
Tobacco use is the leading preventable cause of death in the world and was responsible for over 5 million deaths worldwide in 2005, mostly in poor countries and among the poorer populations. The number of deaths as a result of tobacco is likely to rise to 10 million by 2023 unless measures known and proven to reduce tobacco use are implemented (WHO, 2003b). 655,000 people die every year in the EU as a consequence of tobacco related diseases (Peto et al., 1992).

There is a 2-fold increase in death rate in middle-age of smokers (35-69) compared to non-smokers (Doll et al., 2004).

Smoking is a strong risk factor for six of the eight leading causes of death around the world, (see figure 2.1) which include:

- Lower respiratory infections
- Tuberculosis
- Trachea, bronchus and lung cancers
- Chronic obstructive pulmonary disease (COPD)
- Ischaemic heart disease;
- Cerebrovascular disease (WHO, 2008)

Figure 2.2 Diseases caused by smoking



2.2 Tobacco and cancer

The global burden of cancer is escalating as a result of the dramatic increases in the use of tobacco in the developing world. The use of tobacco is linked to many cancers mainly lung cancer which is the single most common cancer in the world. The use of tobacco is attributable to 87% of all lung cancer deaths. There is a dose response relationship between cancer risk and tobacco use. A lifelong smoker is 20 – 30 times more likely to get cancer than a non-smoker (Oppeltz and Jatoi, 2011).

In 2004, the International Agency for Research on Cancer (IARC) judged that there was sufficient evidence in humans that tobacco smoking causes cancers of the lung, larynx, oral cavity and pharynx, paranasal sinuses, oesophagus, stomach, pancreas, liver, kidney, ureter, bladder, uterine cervix and bone marrow and this list was recently updated to include cancer of the colon and rectum (Parkin, 2011a). It is also responsible for other circulatory diseases, stomach and duodenal ulcers, erectile dysfunction and infertility, osteoporosis, cataracts, age-related macular degeneration and periodontitis.

Women who smoke during pregnancy have a substantially higher risk of spontaneous abortion (miscarriage) than those who do not smoke. Smoking can also cause complications in pregnancy and labour. Babies of smokers are 200 to 250gms lighter than their counterparts and more than 25% of sudden infant deaths are attributable to smoking (NICE, 2008).

The risk of lung cancer relates to the cumulative exposure to tobacco smoke (duration and dose), including the time since quitting in ex-smokers (Parkin, 2011b).

2.3 Tobacco and heart disease

Cigarette smoking is a well-known risk factor for cardiovascular disease both in terms of morbidity and mortality (Doll et al., 2004, Freund et al., 1993). A study from 2012 concluded that those who smoke more intensely and have a history of a higher number of pack years (*pack years: the number of cigarettes a person has smoked over time. One pack year is defined as 20 manufactured cigarettes (one pack) smoked per day for one year*) have a lower exercise tolerance and heart rate reserve with a blunted heart rate response to

exercise. They also concluded that after 3 years, physiological treadmill stress testing improvement, suggestive of improved Cardio Vascular disease prognosis were observed among successful abstainers (Asthana et al., 2012). There is a nonlinear dose response between exposure to tobacco smoke and cardiovascular risk, with a sharp increase at low levels of exposure (including exposures from second hand smoke or infrequent cigarette smoking) and a shallower dose-response relationship as the number of cigarettes smoked per day increases (Surgeon General, 2010).

2.4 Tobacco and respiratory diseases

The two main lung diseases caused by smoking and exposure to Second Hand Smoke (SHS) are Chronic Obstructive Pulmonary Disease (COPD) and lung cancer. 50% of smokers will develop COPD, Smoking is responsible for 80% of COPD cases (2004). 72% of male COPD deaths and 50% of female COPD deaths in Europe in 2000 were due to smoking (Scanlon et al., 2000) and there is a two fold increase in the rate of lung function decline in smokers compared to sustained (5 years) quitters (Peto et al., 1996).

Lung cancer is the biggest killer of all the cancer groups, accounting for about 20% of all cancer deaths, and cigarette smoking is estimated to be responsible for approximately 90% of lung cancer cases. About 70% of the tar contained in the smoke ends up coating the lungs. An average smoker's lung collects about a mug full of tar each year. When it condenses the tar forms a sticky brown substance. Tar contains many cancer causing chemicals as well as irritants that causes smokers to cough.

2.4.1 Smoking related respiratory diseases in Ireland

Respiratory disease is one of the biggest health burdens, it remains the most common reason for a GP visit in Ireland and the third most common reason for hospital admission in Ireland and deaths from respiratory disease now exceed those from coronary disease.

Ireland has the highest death rates from respiratory disease in Europe it being almost twice the European average.

Mortality by type for Respiratory disease in Ireland:

- Pneumonia 33%
- Respiratory cancer* 28%
- COPD 22%
- Other lung diseases 17%
E.g. Asthma and pneumoconiosis

*Includes cancer of nasal cavities, pleura, larynx, trachea, bronchus and lung (Brennan et al., 2008).

Respiratory symptoms are also one of the more commonly reported effects from exposure to second hand smoke. In a study carried out in Ireland in 1995 they found that 46.3% of non-smoking children were exposed to smoking in the home with parental smoking accounting for most of the passive smoking. In this same study they looked at symptoms in both smoking and non-smoking teenagers and found that bronchitis symptoms were more commonly reported in active smokers compared to non-smokers with an odds ratio of 3.02 (95% CI 2.34-3.88) ($p < 0.0001$) or in passive smokers compared to those not exposed to smoking with odds ratio of 1.82 (95% CI 1.32-2.52) ($p < 0.0001$). This was repeated in 1998 showing similar results thus documenting that increased bronchitis symptoms occur in

teenagers exposed to active or passive smoking (Manning et al., 2002). Studies also show that bar workers experience far fewer respiratory and irritant symptoms following the introduction of the smoke-free laws (Goodman et al., 2009).

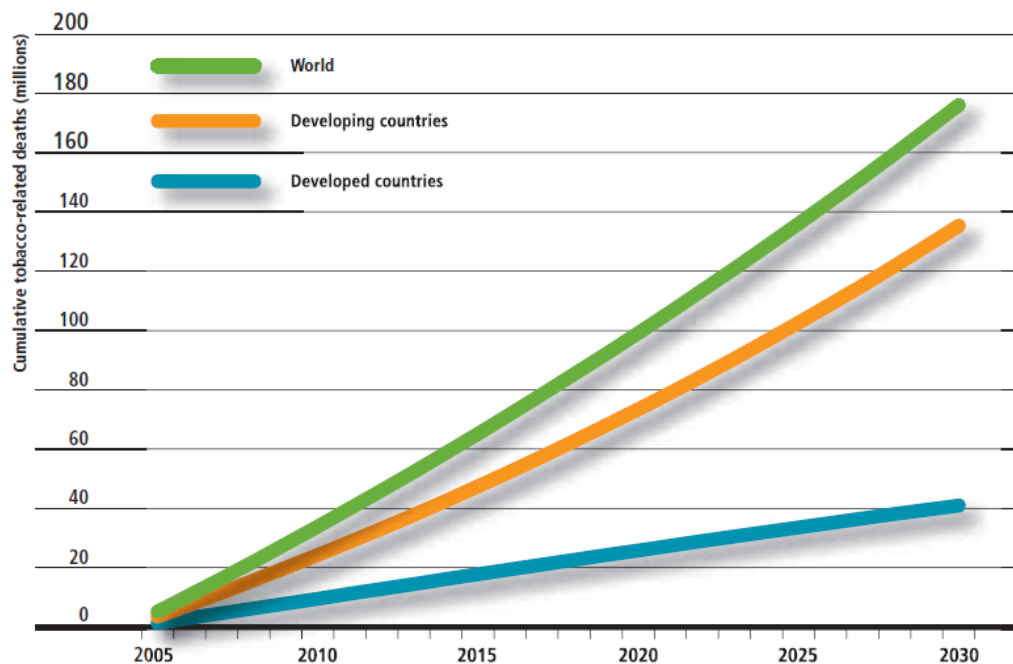
2.5 Smoking related deaths

More than 6 million people die every year from tobacco use and exposure to tobacco smoke (one death every six seconds) and this is expected to rise over the next 20 years (Figure 2.3). There is a two fold increase in death rate in middle-age smokers (35-69) compared to non-smokers (Doll et al., 2004).

Figure 2.3 Cumulative tobacco deaths between 2005 and 2030

TOBACCO WILL KILL OVER 175 MILLION PEOPLE WORLDWIDE BETWEEN NOW AND THE YEAR 2030

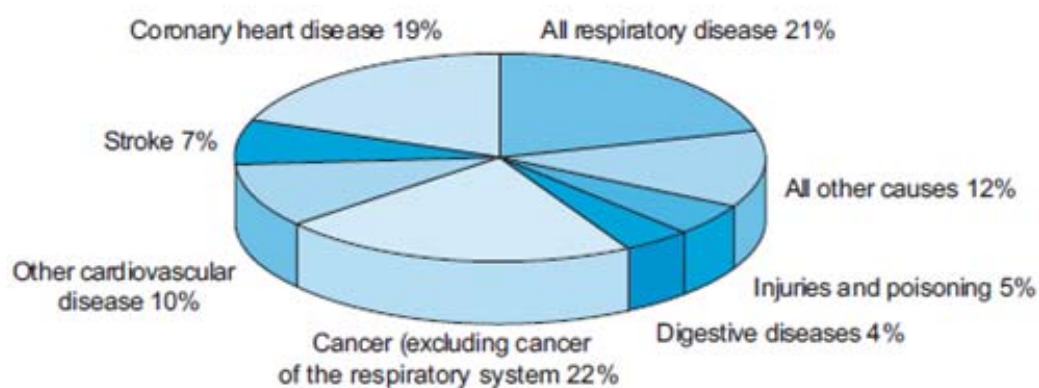
Cumulative tobacco-related deaths, 2005–2030



(WHO, 2008)

It is known from Brennan et al that smoking related diseases are also the most common causes of death in Ireland (fig 2.4).

Figure 2.4 Death by Cause in Ireland in 2004



(Brennan et al., 2008)

2.6 Principles of tobacco control

Several strategies have been shown to reduce tobacco use but 50 years after the adverse health effects of tobacco smoke were proven few countries have established and implemented effective strategies to control its use.

By ratifying the WHO FCTC, 176 countries including Ireland have committed to protecting the health of their populations by joining the fight against the tobacco epidemic and the WHO has produced the MPOWER strategy package to aid this important task.

M Monitor tobacco use and prevention policies

P Protect people from tobacco smoke

- O** Offer help to quit tobacco use
- W** Warn about the dangers of tobacco
- E** Enforce bans on advertising, promotion and sponsorship
- R** Raise taxes on tobacco products

Monitoring- Monitoring is essential to provide baseline data which will enable targeting of activities, tracking of progress and effectiveness of implementations of policies. Countries best at monitoring prevalence of tobacco use can be seen in figure 2.5 and the monitoring of tobacco use and tobacco control policies is critical to the success of the other 5 MPOWER measures.

Figure 2.5 Prevalence of Tobacco use worldwide.



(WHO, 2011)

The countries coloured in orange represent those that best monitor the prevalence of tobacco use.

Protection - Smokefree legislation should be in place and be fully enforced to enable totally smokefree environments in health care and educational settings, and all indoor workplaces including restaurants and bars. Exposure to second hand smoke is responsible for many diseases including heart disease, lung cancer, and respiratory diseases. There is no known safe level of exposure to second hand smoke.

Offer help to quit/cessation - Unless current smokers quit, tobacco deaths will rise dramatically in the next 50 years. Health care systems should be strengthened to enable easy availability of tobacco cessation advice and treatment to patients. Quit lines and other

community initiatives should be supported along with low cost pharmacological therapy for the treatment of tobacco dependence.

Warn - This involves implementation of health warnings on tobacco products and the development of counter tobacco advertising. Plain packaging and graphic warnings on tobacco products are needed to reduce the attractiveness of tobacco to children.

Enforce - Enforce legislation that comprehensively prevents any form of tobacco advertising, promotion and sponsorship both direct and indirect such as product placement.

Raise - Price and Taxation - Increasing price and taxation will help smokers to quit smoking, reduce the number of new smokers and thus reduce the number of people exposed to secondhand smoke. Significant increases in tobacco taxes are a highly effective tobacco control strategy and lead to significant improvements in public health. The positive health impact is even greater when some of the revenues generated by tobacco tax increases are used to support tobacco control, health promotion and/or other health-related activities and programmes (Chaloupka et al., 2012).

Higher taxes increase government revenues. Contrary to tobacco industry propaganda, tobacco tax increases do not decrease government revenues. Increasing tobacco taxes by 10% generally decreases tobacco consumption by 4% in high-income countries and by about 8% in low- and middle-income countries (WHO, 2008). SimSmoke (SS) which is a simulation model used to examine the effects of tobacco control policies on smoking prevalence through, initiation, smoking cessation and associated future premature deaths.

An adapted model IrelandSS was used recently in study of Irish data from 1998 and projected to 2040. Using this, Ireland SS demonstrated that the result of the policies implemented between 1998 through 2010, showed that 1716 fewer smoking attributable deaths (SADs) are estimated by 2010 which is reasonably close to results from surveys carried out. By 2040, the relative reduction in prevalence increases to 29%, with 50 215 fewer SADs. It also showed a 21.8% reduction in prevalence of male smokers from 1998 to 2010 of which only 9% were attributable to smoking cessation services. Whereas 45% was attributable to price increase (Currie et al., 2012).

CHAPTER 3 TREATMENT OF NICOTINE ADDICTION AND THEIR EXPECTED OUTCOMES

3.1 Nicotine and Addiction

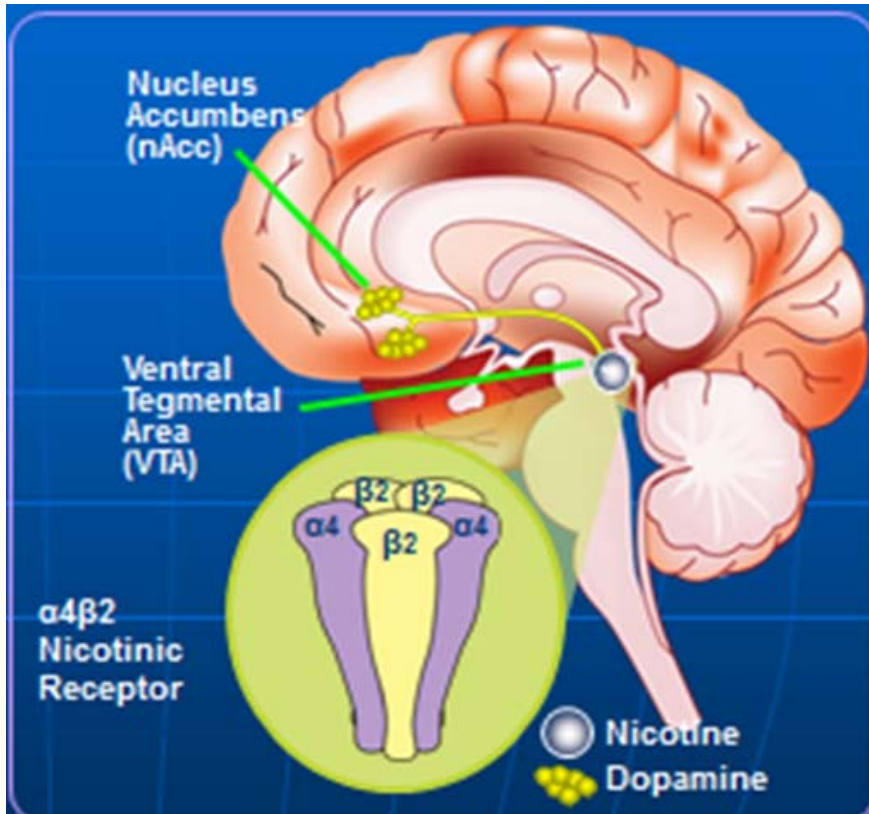
The chemistry and physiology of nicotine is well known and the addictive nature of the drug has been well established. Absorption of cigarette smoke from the lung is very rapid, after every inhalation a high concentration arterial bolus of nicotine is produced and this reaches the brain within 10 – 16 seconds, which is faster than by intravenous injection. Nicotine has a distributional half-life of 15 – 20 minutes and a terminal half-life in blood of two hours. Therefore smokers experience a pattern of repetitive and transient high levels of nicotine from each cigarette smoked which necessitates hourly smoking of cigarettes to maintain raised concentrations. Overnight blood nicotine levels drop close to those of non-smokers (Jarvis, 2004).

Since the 1980's it has been accepted that tobacco products are among the most addictive and deadly of all dependence producing substances (London, 2000). Nicotine is carried by tar particles to the lung alveoli and then to the brain- a process that takes about 10 seconds per inhalation (Russel et al., 1976). Nicotine binds to nicotine cholinergic receptors in the brain which leads to the release of neurotransmitters (Benowitz, 2010,).

Nicotine has pervasive effects on brain neurochemistry. It binds to and activates the $\alpha 4\beta 2$ nicotinic acetylcholine receptor stimulating release of dopamine in the nucleus accumbens,

(Fig 3.1) this results in the satisfaction associated with smoking. A drop in nicotine levels leads to craving and withdrawal (Jarvis, 2004).

Figure 3.1 Effect of nicotine on the brain



(Tomkins DM and Sellers EM, 2001)

Tobacco addiction is associated with an emotional as well as a physical dependence. It is a complex process and to understand its complexity it is important to note the 3 important factors that play a part in this addiction: The physical addiction to the drug nicotine, the habit which includes handling, the ritual of opening the pack, lighting up, the sound of the paper etc. and the psychological / emotional dependence often used as an aid to damp down and or control negative feelings of anxiety, frustration or anger.

Therefore, the ideal treatment for tobacco-cessation involves a comprehensive approach that addresses all major issues of tobacco addiction both pharmacological and non-pharmacological.

Treatment populations for smoking cessation:

The target population for treatment should be everyone who smokes or uses any tobacco product. Smoking cessations services should aim to treat 5% of population who smoke or use other forms of tobacco. They should aim for a quit rate of 35% at 4 weeks and this quit rate should be validated by carbon monoxide monitoring (NICE, 2008).

3.2 Brief intervention

Brief interventions involve opportunistic advice, discussion, negotiation or encouragement. They are commonly used in many areas of health promotion and are delivered by a range of primary and community care professionals. Brief intervention with regard to smoking takes between 5 and 10 minutes and may include the following:

- simple opportunistic advice to stop
- an assessment of the patient's commitment to quit
- an offer of pharmacotherapy and/or behavioural support/referral

(National Institute for Health and Clinical Excellence, 2006)

When you compare quit attempts which have been unassisted, to quit attempts following a brief intervention, there is a difference in the cessation rate of about 2.5% between those who received advice from a physician and those who did not (Lancaster and Stead, 2008).

3.3 Motivational interviewing

The definition of motivational interviewing has evolved over time. Initially it was described by William R Miller in 1983 as an approach to behaviour change. Motivational Interviewing has been established as evidence based practice in the treatment of patients with substance use disorders. It does not impose change but supports change which fits in with the patient's own beliefs, values and concerns.

A meta-analysis of 14 randomised trials showed that, as compared with brief advice or usual care, motivational interviewing increased 6 month cessation rates by about 30%. Cessation rates were higher if smokers received two or more sessions rather than one session and if the sessions lasted more than 20 minutes (Hettima et al., 2005).

3.4 Intensive smoking cessation programmes

Group therapy offers individuals the opportunity to learn behavioural techniques for smoking 'group therapies' have been described in the literature, most of which come from four basic types of approaches:

Analytical: Its goal is to uncover and resolve hypothetical, unconscious conflicts which are expected to lead to the patients' recovery, i.e. attention to group members'

hidden motivation, interactions and attention to group members' interactions with group leaders.

Interpersonal: Social learning and feedback i.e. allowing group members learn how their behaviour affects others.

Experimental: This is done mainly by working with the patients' current awareness of their experiences. The therapists using this approach are encouraged to use techniques aimed at stimulating desirable group experiences.

Didactic: Usually connected primarily with behavioural and cognitive treatments. Here the therapists usually have a set agenda for each group session, and the groups are given tasks at each meeting.

More information on different approaches to group treatment, descriptions of group processes and of practical skills involved in running groups can be found in Yalom and Leszcz (2005) and Aveline and Dryden (1988).

3.5 Pharmacological treatments

Nicotine Replacement Therapies (NRT)

Patches: Patches deliver a continuous even dose of nicotine over long periods of time and there are many different doses and types of patches to choose from. You apply them to the upper arm, hip, back or chest, the area chosen should be clean, dry and free of hair before applying the patch, to ensure that it sticks. It is also recommended that the site of placement of the patch be rotated to avoid any localised skin irritation. Patches should not be placed on broken skin and patients are advised not to smoke while wearing a patch.

NiQuitin Patches are either opaque in colour or completely clear which allows for more discrete use. They come in 3 different strengths 21mg, 14mg and 7mg and are delivered over a 24hr period regardless of strength. NiQuitin suggest the following treatment plan when using their product:

- For 6 weeks, start with the Step 1 (21mg) NiQuitin Patch if you smoke 10 or more cigarettes a day. (Go straight to Step 2 (14mg) if you smoke less).
- For a further 2 weeks, change to the Step 2 (14mg) NiQuitin Patch. (Alternatively start with Step 2 (14mg) for 6 weeks if you are a light smoker).
- Finally, move onto the Step 3 (7mg) NiQuitin Patch for 2 weeks.

Nicorette Patches; Invisipatch is a semi-transparent 25mgs patch and delivers the dose over a 16hr period which is advised to be applied first thing in the morning and removed prior to going to bed.

Inhalers: These resemble a cigarette and into the inhaler are placed cartridges containing nicotine which are then inhaled using a similar action to smoking. The inhaler is made up of a mouth piece and a replaceable nicotine cartridge. When the patient draws on the mouth piece of the nicotine inhaler the cartridge releases nicotine which helps relieve cravings while at the same time the patients hands are kept busy. The inhaler available in Ireland is the **Nicorette inhaler**. It is recommended that 6 to 12 cartridges be used per day and it is particularly useful for those smokers that miss the hand to mouth movements of smoking.

Gum: This comes in two strengths 2mgs and 4mgs and this can be taken up to 15 times per day. To release the Nicotine from the gum it should be chewed slowly until the taste becomes strong then the gum needs to be parked between the cheek and gums to allow for absorption of Nicotine. Once the taste fades the gum needs to be chewed again to release more Nicotine and then parked again to allow for its absorption this can be repeated using the same piece of gum for about an hour after which it is recommended that you use a new piece of gum. Gum products available are **NiQuitin Gum** and **Nicorette Gum** both come in both strengths of 2 and 4mgs, Nicorette also produce an Icy White Gum which in addition to releasing nicotine helps to improve teeth whiteness.

Micro Tabs/ Lozenges:

Nicorette Micro Tab is a sublingual nicotine replacement tablet. It is particularly useful for those who want a discrete delivery of nicotine. A tablet is placed under the patients tongue and allowed to slowly dissolve. Patients are instructed not to swallow chew or suck the tablet, nicotine will be released and absorbed through the lining of the mouth. It only comes in one strength and it is recommended that smokers who smoke less than 20 per day use one Micro Tab per hour while those who smoke more than 20 per day may take 2 Micro Tabs per hour the amount not to be exceeded per 24hrs, being 40.

NiQuitin Lozenges: These come in 2mg and 4mg strength and it is recommended that the more heavily addicted smoker use the higher dose. The recommended dose is 1 lozenge every one to two hours about 9 per day but can be used up to a maximum of 15 lozenges per day.

NiQuitin Mini: These are small mint flavoured Nicotine Lozenges that relieve Nicotine cravings within minutes and deliver their full dose 3 times faster than gum. There are 2 doses of NiQuitin Minis available 1.5mg and 4mg. It is recommended that if you smoke less than 20 cigarettes per day that you use 1.5mg and that if you smoke over 20 cigarettes per day that you use the 4mg.

Varenicline (trade name **Champix)** Tablets contain the active ingredient Varenicline. Varenicline is a type of medicine called a nicotinic acetylcholine receptor partial agonist. This means that it acts on the same receptors in the brain as nicotine. Varenicline works by stimulating the nicotinic receptors in the brain.

When you smoke a cigarette, the nicotine quickly reaches your brain and tells certain receptors there to start releasing dopamine, a chemical that makes you feel good. What Varenicline does is stop those receptors from responding to the nicotine. That means you're not going to get that "rush" or "buzz" normally associated with smoking. Once the 'buzz' is gone, the temptation to sneak a cigarette is going to be less and less. Varenicline has high and selective activity at alpha4–beta2 receptor. It is a partial agonist at this receptor in vivo producing a lesser response than that of nicotine (30–60%) but also blocks the effect of any nicotine added to the system (Jiloha, 2010). Thus, Varenicline maintains a moderate level of dopamine release, which reduces craving and withdrawal symptoms during abstinence. It also blocks the reinforcing effects of nicotine obtained from cigarette smoke in the case of relapse.

Champix is only available on prescription. A complete course of treatment is for 12 weeks. It is prescribed as a 2 week starter pack during which time the smoker may continue to smoke but the smoker **needs to set a quit date between day 8 and day 14** of the treatment.

Day 1 – 3 One 0.5mg tablet to be taken in the morning.

Day 4 – 7 One 0.5mg tablet to be taken twice daily, in the morning and once in the evening at about the same time each day.

Day 8 - 14 One blue 1mg tablet to be taken twice daily, one in the morning and one in the evening at about the same time each day. This dose is continued from week 3 to week 12. The prescription for the 2nd and 3rd months comes in a continuation pack.

It is recommended that patients complete a 3 month course of Champix. There is also evidence that if successful for 12 weeks a further 12 weeks of treatment has added advantage in preventing relapse.

Bupropion (trade name Zyban). The recommended treatment period is 7 to 9 weeks.

Dosage: Initially 150mg once daily for 6 days then 150mg twice daily (8hrs apart) for the remainder of the 7 – 9 weeks. During the first 2 weeks of treatment the smoker continues to smoke but should be aware when commencing the treatment that their quit date will be 2 weeks into the treatment period. The maximum single dose is 150mgs and the maximum daily dose is 300mgs.

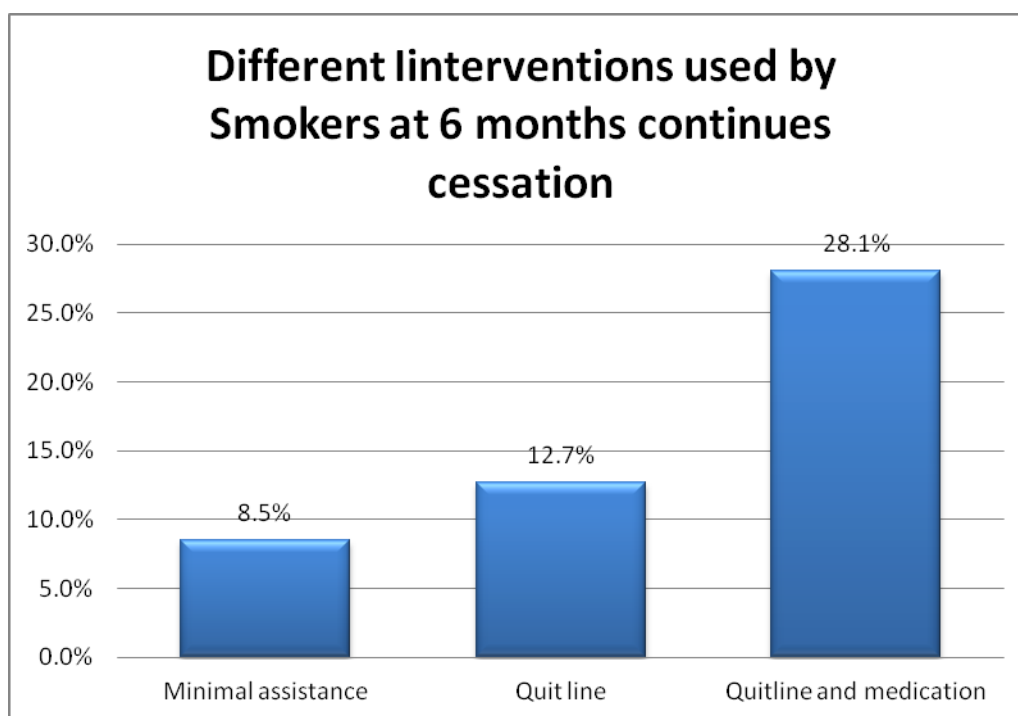
Neither Varenicline nor Bupropion should be offered to young people under 18 nor to pregnant or breastfeeding women.

Other methods of treatment available for smoking cessation are; Acupuncture, Hypnotherapy and Rapid smoking, a form of aversion therapy. For both hypnotherapy and acupuncture there is evidence that they do not improve long term quit status more than a placebo. As far as rapid smoking goes there is good evidence that this can improve abstinence rates but it is not recommended as it conflicts with smokefree regulations (NICE, 2008).

Quitlines

Quitlines have been shown to be effective and there is a national Quitline in Ireland which is run by the Health Service Executive in conjunction with the Irish Cancer Society. Several meta-analysis have established that proactive telephone counselling is an effective intervention for smoking cessation (Keller et al., 2010). Quitlines have the advantage of being able to reach a large number of the population. Overall quit rates achieved by patients using different interventions are shown in figure 3.2

Figure 3.2 Different interventions used by smokers reporting continued cessation for 6 months.



Reproduced from (WHO, 2011)

3.6 Cessation rates

In the Lung Health Study of patients with chronic obstructive pulmonary disease (COPD) the effect of smoking cessation was striking; and it showed that the development of clinically significant airways obstruction was largely prevented in those who quit as compared with those who did not. It also showed beneficial lung function improvements in both sexes and concluded as a result that it is probably 'never too late' to use cessation as an intervention for COPD (Anthonsien, 2004).

In a study carried out in the UK which was published in 2000, it was shown that by 1990 smoking cessation had almost halved the number of lung cancers that would have been expected if the former smokers had continued. It also showed that people who stopped smoking, even well into middle age, avoid most of their subsequent risk of lung cancer, and stopping before middle age avoids more than 90% of the risk of lung cancer attributable to tobacco (Peto et al., 2000).

In the UK between 2003 and 2006 over 800,000 smokers availed of the NHS smoking cessation services. Between 2005 and 2006 of those who set a quit date 55 % had quit at 4 weeks. The cost to the NHS per quitter for delivery of this service was £158.00 (The information Centre, 2006).

Intervention from health professionals has been shown repeatedly, in randomised controlled trials, to increase the percentage of smokers who stop and remain abstinent for 6 months or more (West et al., 2000).

Approximately one in three European smokers have tried to quit in 2008 and of those that have tried 51% remained abstinent for less than or equal to 56 days, 28% remained abstinent for 1 to 8 weeks, only 19% remained abstinent for more than 8 weeks and <5% of these can be expected to be successful at 12 months (Andreas et al., 2009).

3.7 Predictors of successful quit rates

Possible predictors of successful quit rates are many and varied such as: Gender, age, socio-economic group, smoking status (level of addiction), family environment, treatment offered, medical advice, primary reason for quitting, number of previous quit attempts,

support and or pharmacological interventions. The ability of the individual to pay for treatment or whether the treatment is available free to some individuals may also impact on successful quit rates.

Quitting produces immediate and significant health benefits and reduces most of the associated risks within a few years of quitting (General, 1988).

In the USA studies show that successful quitters were more likely to be well educated at least to college level, have rules against smoking in their homes, be less likely to have switched to light cigarettes for health concerns, and more likely to be aged 35 years or older, and be married or living with a partner (Lee and Kahende, 2007).

3.8 Validation of quit status

3.8.1 Cotinine:

Cotinine is a breakdown product of nicotine and therefore is a reliable biomarker for nicotine and this makes it an accurate way of measuring exposure to tobacco smoke.

Cotinine levels can be measured in blood, urine, hair and saliva and levels can be measured to validate smoking status. The most common sample for cotinine measurement is saliva due to ease of sampling. More often cotinine levels are not used as a means of validating quit status as it is time consuming and expensive but is used extensively in population studies e.g. detection of exposure to secondhand smoke in children.

3.8.2 Breath carbon monoxide measurement and smoking:

Carbon monoxide is a gas that is released from burning tobacco. When it is inhaled it enters the blood stream and interferes with the working of the heart and the blood vessels. Carbon monoxide (CO) is a colourless, odourless gas that is produced as a result of incomplete combustion of carbon-containing materials, such as tobacco and is thus a very important metric to quantify (McCaffrey et al., 2012). Up to 15% of a smoker's blood can be carrying carbon monoxide instead of oxygen. The level of carboxyhaemoglobin (COHb) in the blood has also been shown to be a useful marker of tobacco smoke absorption (Wald et al., 1981).

The breath CO monitor is a good tool for use in smoking control assessments and a reading greater than 5 ppm strongly suggests that the patient is a smoker and on questioning those whose readings were between 5.5 and 18ppm admitted having smoked a cigarette on the day of the test (Low et al., 2004). This is the validation method of choice for smoking cessation services due to its low cost, ease of use and instant results. Most cessation services use CO monitors for validation purposes and this is strongly recommended.

3.8.2.1 Equipment - CO monitor

Most cessation treatment providers use co monitors to validate a patient's quit status.

The one I use when treating is the Care fusion CO monitor.

3.8.2.2 Method

A patient is instructed to take in a deep breath, hold it for at approximately 20 seconds and then exhale slowly and completely into the CO monitor. The monitor displays parts per million (PPM) of Carbon Monoxide on its clear LCD display, and when used in conjunction with the smoking cessation guide chart, %COHB are readily available.

The CO Monitor features single-button operation and coloured light indicators to simplify patient understanding of the process:

- Green: 0 to 6ppm
- Amber: 7 to 10ppm
- Red: 11 to 20ppm
- Flashing red and alarm: >20ppm

3.8.2.3 Calibration of CO monitors

CO Monitors do not need frequent calibration and usually they come with a guarantee from the manufacturers saying that the factory calibration is valid for 6 months. Once this time has passed they need to be sent back to the manufacturers for re-calibration or if the calibration gas is on site they can be calibrated in a medical physics department. It is recommended that they are calibrated every 6 months to ensure accuracy.

3.8.3 Self-Reported Quit Status

Many cessation treatment providers gather their quit rate statistics by telephone consultations. This means that a lot of the quit rates recorded are self-reported by the patients and this has its limitations. An example of this self-reporting limitation was demonstrated in a study of primary care patients with COPD where it was shown that they do not provide valid information on their smoking status, which hinders the service providers ability to provide adequate therapeutic interventions (Hilberink et al., 2011). Use of biochemical validation either by monitoring of breath CO or measurement of cotinine levels in daily care could overcome this problem.

In this chapter I will discuss the development of a smoking cessation providers database, a national census of the cessation services which will assess their range and availability, the development of a cessation treatment database, pilot of its use and a patient satisfaction questionnaire for the service they attended. In each of the above I will outline the methods used, the populations surveyed and or treated and the instruments used to do so. All data collected stored and analysed in this study were treated with care and consideration for the patients and service providers from whom they were collected. All computers used had secure usernames and passwords and were protected by Symantec endpoint. Data were stored on a secure password protected server which is stored in a network operations centre (NOC). The NOC is a secured locked room with restricted access.

4.1 Study plan

- To establish a comprehensive database of cessation service providers.
- Census of services including patient numbers, referral paths and training of service providers.
- A data collection tool/treatment database for use by service providers.
- Piloting of data collection instrument/treatment database and analysis of data gathered using it.
- A patient satisfaction survey of the service they received for smoking cessation.

Gant Chart: This project was designed to run over a 30 month period to include several elements

<i>Months</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Refine and futher develop Database of Cessation service providers																														
Development of Census questionnaire to access range and availability of services and guidelines																														
Pilot Census Questionnaire																														
Analyse and revise Census questionnaire																														
Circulate Census Questionnaire & collect data																														
Data Entry of Census Questionnaire data																														
Develop a smoking cessation treatment data collection Instrument(Treatment database)																														
Develop Guidelines for completing Treatment database																														
Organise and conduct Workshops nationally for cessation service providers																														
Circulation of Treatment databases along with guidelines and Patient satisfaction questionnaires																														
Treatment data collection cleaning and entry																														
Annalysis of treatment data base and patient satisfaction survey.																														

4.3 A database of smoking cessation service providers:

Targeting, validating and expanding on the number of service providers identified in a previously developed database.

4.3.1 Instrument: Excel Based Database.

The database of Ireland's smoking cessation service providers was to be a full and comprehensive one of existing services including the location of service, name of service providers, their contact details, phone, email addresses and details of the line managers. For the purposes of the development of a smoking cessation services database, a smoking cessation service was defined as a service that could be based in a healthcare or community setting, providing a service either on an individual one to one basis, over the telephone or in a group, that the service be delivered by a specially trained person who will give smokers the knowledge and support required to change their smoking behaviour in such a way as to increase their chances of a successful quit attempt (Currie et al., 2010).

4.3.2 Methods

An existing incomplete Irish Health Promoting Hospitals Network database of hospital based service was provided to TFRI and this database was then expanded and updated. An advertisement was placed in Health Matters which is a Health Service Executive science newsletter which provided a description of the project and a request for contact details with regard to known smoking cessation services be sent on to TFRI. In an effort to identify services in General Practice contact was made with the Irish practice nurses and the Irish

College of General Practitioners. All known private health care clinics and hospitals were also contacted to establish the existence of any private services.

Every effort was made to ensure that the database was as comprehensive as possible so that the reliability of the planned census of cessation services would be valid.

4.4 National census questionnaire

A census of all known smoking cessation programmes was undertaken to assess the range and availability of smoking cessation services nationally.

Population: 93 smoking cessation programmes were identified through HSE and HPH Network and from further research by TFRI which completed the database of all known smoking cessation programmes for this project.

4.4.1 Survey Instrument: Questionnaire

A previously validated questionnaire was sought in UK, Canada and elsewhere via Globalink - an online international Tobacco Control network. As there was not an appropriate validated survey tool available to us a questionnaire of our own was developed (Appendix 1). This questionnaire was developed in partnership with TFRI and members of the Irish Health Promoting Hospitals Network (IHPHN), Institute of Public Health (IPHI) and the Health Service Executive (HSE). Questions covered the following areas:

- Background and training of staff providing the service
- Range, intensity and frequency of services offered
- Service setting, location and resources

Once the questionnaire was designed it was piloted among 6 cessation service providers to test its validity and they were asked to return completed questionnaires within 2 weeks commenting on the appropriateness of questions, its ease of completing and any content that they felt was not covered. Following the piloting of the questionnaire comments from the service providers were discussed with staff from TFRI, and IHPH and the questionnaire was subsequently revised and modified as appropriate. The questionnaire and explanatory letter on how to complete it were mailed to all known smoking cessation facilitators in electronic format to 77 cessation service providers and by hard copy in the post to 16 cessation service providers where it was established that they did not have access to a work computer or email address. Respondents were asked to return the completed questionnaire by email or by post to the TFRI office when email was not available to them.

4.4.2 Delivery/Reminders:

Up to two reminders were sent to programme facilitators one week post deadline and a second 2 weeks post deadline, to return the questionnaire. These were then followed up by at least 2 phone calls in a bid to get as large a response as possible.

4.4.3 Data Quality:

Quality control procedures for data entry were put in place including checking data fields for invalid entries, crosschecking dates to ensure that they were within the time frames required as well as double entry for all responses.

4.4.4 Data Analysis:

Data were inputted by hand directly from the electronic and hard copy version of the questionnaires into excel. Data were entered with double entry for accuracy and analysed using Statistical Packages for the Social Sciences (SPSS Version 19.0) which provided the descriptive data presented.

4.5 Smoking cessation treatment data collection instrument (treatment database)

A data collection instrument was developed to allow for the assessment of smoking cessation programmes. A convenience sample of 1,490 patients was recruited cross-sectionally while attending smoking cessation (SC) services throughout Ireland for a 3 month period in 2008. All but two of the service providers who participated in the pilot of the treatment database did so between January and April while two others who had delays in starting its use piloted the treatment database between May and August.

4.5.1 Getting 'buy in' of smoking cessation service providers:

Convening and conducting workshops for smoking cessation facilitators/co-coordinators:

Three workshops were held nationwide, in Limerick, Dublin and Sligo. These workshops were hosted by the HPH Network and TFRI staff. Using the newly completed and a now comprehensive database of the 93 smoking cessation SPs, they were all contacted and invited to the workshop location which would be most convenient for them to attend. The purpose of the workshops was to get agreement and "buy in" from smoking cessation SPs to participate in the study and to complete the treatment data collection instrument

(treatment database) (Appendix 2) for all patients attending their service over a 3 month period. At these workshops TFRI and staff from HSE and HPH demonstrated the use of the data collection instrument. Guidelines/instructions were written (Appendix 3) for completing/entering data into the database and these were circulated among the 93 service providers prior to the workshops. At each workshop time was taken to go through the guidelines/instructions in detail with the SPs. They were also given time to handle and enter data into the treatment database and any concerns or queries they raised were dealt with. The coding systems of the data collection instrument as well as the patient satisfaction questionnaire were explained.

4.5.2 Instrument: Excel database.

Using best practice criteria from the literature, the NICE guidelines, looking at existing datasets from Northern Ireland and Denmark as well as those used by some of the Smoking cessation service providers in Ireland, TFRI in consultation with HSE, IPH, and HPH developed a data collection instrument. In particular it was found that the most comprehensive dataset which was being used in Ireland at the time was by the smoking cessation services in the North West. The data collection instrument was designed to collect all relevant information in a format that was quick and easy to complete. In its design, cognisance was taken of the need for a simple and timely completion method in order to aid compliance. The instrument was designed to gather information such as whether the patient had previous quit attempts and if so whether they used Nicotine Replacement Therapy and whether the patient availed of one to one or group counselling, the number of visits to the cessation service, smoking profile, level of addiction and referral

source. It also was designed to gather patient demographic details such as sex, age and social class and follow up information on patient smoking status at 4 weeks and 3 months. With regard to monitoring patients, the Russell Standard from the UK was detailed, which has been adopted as guidance. It specifies times during which follow-up reviews should take place. To save time, the data tool was programmed to automatically generate dates indicating the start and end of the 4 week and 3 month follow up periods according to the Russell Standard once a quit date has been entered.

Each service provider was given their own unique identifying code which was developed using a minimum of 2 letters per centre. The first patient entered was given the added numerical identity of 001, e.g. a code would read AA001, and the last code allocated was ZZA001. These codes were for use when entering patients into their system to protect the identity of the patient/patients being entered.

4.5.3 Recruitment of subjects

A study of all patients attending participating smoking cessation programmes was conducted.

4.5.4 Population:

The population consisted of all consenting patients attending the 49 participating smoking cessation programmes during the 3 month pilot use of the treatment database. Data on 1490 patients were collected.

The data collection instrument/treatment database with guidelines was circulated to the participating 49 smoking cessation service providers. The co-ordinator/service providers were asked to collect data for each patient attending their smoking cessation service during the 3 month pilot period. Data were collected at the point of entry to the service. To ascertain whether a patient has remained abstinent, the co-ordinator needed to contact each patient at 4 weeks and 3 months after the patient has completed the smoking cessation programme. It was requested that this contact be done in person where possible to enable CO validation of their smoking status so as to enable recording of patient quit status into the treatment database. The data were collected electronically on an Excel based spreadsheet. Each of the 49 participating service providers was emailed their personalised treatment database. The cessation providers returned the uniquely coded anonymised patient data sets to the study centre at TFRI. Data received from 39 providers were suitable for analysis, the 2 databases received which were unsuitable for analysis used an Access database and it was not possible to match the variables from the 2 different data sets and so they had to be excluded from the analysis. The remaining 8 providers who had initially agreed to participate failed to do so.

Timeframe for data collection: A three month entry period whereby data on all patients who consented to be a part of the project and were using the smoking cessation service was collected. Each patient was “followed up” at 4 weeks and 3 months post their quit date during the smoking cessation treatment programme and cessation service providers were asked to validate the patients smoking status at these designated times by using a CO monitor. These readings were to be taken by each service provider. A successfully

validated reading was deemed to be ≤ 6 ppm and a failed quit attempt was deemed to have a reading of ≥ 7 ppm (Middleton and Morice, 2000).

4.5.5 Main outcome measures:

The main outcome measures of the treatment database were the 4 week and 3 months quit rates. **Definition of quit used at 4 weeks:** According to the Russell Standard, a patient is counted as a '4 week quitter' if they have been assessed 4 weeks after their quit date (minus 3 days or plus 7 days) and declares that he/she has not smoked a single puff on a cigarette in the past 2 weeks.

Definition of quit used at 3 months: A patient is counted as a '3 month quitter' if they have been assessed 3 months after their quit date (minus 14 days or plus 14 days) and declares that he/she has not smoked more than 5 cigarettes in the past 10 weeks.

Other covariates studied were:

- Demographics: Gender /Age/Ethnicity.
- Pregnancy status
- Referral source of patients
- Patient status i.e. in patient/community/outpatient
- Smoking History
- Fagerstrom Score is a method of measuring the degree of tobacco addiction/dependency
0-3 mild level of addiction; 4-5 moderate level of addiction; 6-10 high level of addiction.
- Treatments used on this attempt and on previous quit attempts
- Number of previous quit attempts

- CO Validation; Service providers were asked that CO validation should be attempted on all patients who have said they are quit at their 4 week follow-up/review CO monitoring of patients at the 4 week and 3 months follow-up stage is considered to be good practice, as it is motivational for patients as well as a validation of their smoking status
- Occupation/Social Class. The entire population was classified into one of the following social class groups (introduced in 1996) which are defined on the basis of occupation:
 1. Professional worker
 2. Managerial and technical
 3. Non-manual
 4. Skilled manual
 5. Semi-skilled
 6. Unskilled
 7. All others gainfully occupied and unknown

The occupations included in each of these groups have been selected in such a way as to bring together, as far as possible, people with similar levels of occupational skill. In determining social class no account is taken of the differences between individuals on the basis of other characteristics such as education. Accordingly social class ranks occupations by the level of skill required on a social class scale ranging from 1 (highest) to 7 (lowest).

4.6 Patient satisfaction questionnaire

4.6.1 Population:

All patients who were treated during the pilot of the treatment database were asked to complete a satisfaction questionnaire. A sample of patients from each smoking cessation programme who indicated their willingness to participate in a satisfaction survey as well as signing the relevant consent form.

4.6.2 Survey Instrument: A specially developed, self-administered questionnaire (Appendix 4).

Timeframe for data collection: Patients were asked to complete a previously piloted questionnaire once they had completed the smoking cessation programme. These were all patients entered into the treatment programme during the 3 month pilot of the treatment data collection instrument who agreed to complete the satisfaction questionnaire.

All patients who agreed to complete the satisfaction questionnaire were issued with them by their smoking cessation provider either by hand on entry into the treatment programme or by post on completion of their treatment. They were requested to return the completed questionnaires anonymously to the research institute TFRI and not to their providers of care. The questionnaires were issued with the same corresponding unique code as the code used entering their data for the 3 month trial of the treatment database. The anonymity of the patient was maintained at all times using these unique identifying codes which were issued in batches to the providers who then allocated them to the patients. No data was received from providers with either names initials or addresses of patients. This was done

with a view to comparing the satisfaction questionnaires with the outcome of their treatment while at all times protecting their personal individual identity. At the time of issue of the patient satisfaction questionnaire by the provider to the patient they were also given a stamped addressed envelope to TFRI which they posted themselves and did not have to hand back to their service provider.

4.6.3 Delivery/Reminders:

It was requested that at least 1 telephone reminder (at 1 week post treatment completion or failure to return for follow up) be made requesting patients to return questionnaires.

4.6.4 Data Quality:

Quality control procedures for data entry were put in place including double entry for all responses allocation of unique identifier, reconciliation of survey response with treatment data already collected and identifying code verification.

4.6.5 Data Analysis:

Data were entered directly into SPSS by hand from the 342 hard copies received by post of the patient satisfaction questionnaires and this statistical package was used to analyse data findings.

4.6 Ethics submission and approval.

Various ethical approval committees were considered and an ethics submission was made to the SJH / AMNCH RESEARCH ETHICS COMMITTEE for approval of the project on a national basis. A study protocol was put together and submitted along with the completed ethics application form. During completion of the ethics approval application form a

patient information sheet was developed along with a patient consent form. The completed application form, information sheet and consent form were submitted and approval was received (Appendix 5).

4.7.1 Subject consent/subject information sheet

All patients attending smoking cessation services were asked permission to have their data entered into the electronic database which was being piloted over a 3 month period and to complete a patient satisfaction questionnaire in relation to the smoking cessation service they had received. If they were agreeable then they were given an information sheet and consent form to sign giving permission for their data to be entered into the local database and then to be sent to and be analysed by TFRI.

After consultation with cessation service providers around the country some individuals raised concerns with regard to approval of the project on a national basis and requested that Ethical approval be sought in their individual institutions. This applied to St. Vincent's Hospital, Beaumont Hospital and the Mater Hospital. Further ethical approval was sought and received by each of the above although St. Vincent's Hospital decided not to participate in the pilot use of the treatment database as they felt that their patients would not be able to understand the information provided and thus would be unable to give their consent.

CHAPTER 5

RESULTS

In this chapter results will be presented on all 4 limbs of the project.

1. Smoking cessation service database
2. Census of smoking cessation services in Ireland
3. Pilot of treatment database
4. Patient satisfaction questionnaire

5.1 Smoking cessation service database

Once all avenues of enquiry were exhausted a finally completed database on which data was gathered on 93 smoking cessation service providers (SPs). No service providers were identified in private health clinics. The database contains the name of the service provider, location of the service and contact details including address, phone number and email when available.

5.2 Census questionnaire analyses

5.2.1 Sample:

Of the possible 93 cessation SPs canvassed, it was established that questionnaires could be sent for completion electronically by email to 77 cessation SPs and 16 were sent out for completion by hard copy in the ordinary post because email addresses were not available. Following the sending out of the questionnaires two follow up phone calls were made where it was established that 13(14%) of cessation SPs needed to be removed from the list of possible responders due to extended leave, shared service coverage or discontinuation of

service. Therefore a population of 80 eligible cessation SPs were thought to constitute the population for this survey. Of these 68 responded to the questionnaire, giving a response rate of 85%.

5.2.2 Training of service providers

All 68 SPs had some specific training in smoking cessation with more than 2 years' experience and are employing evidence based interventions. 62.1% (n=41) expressed a need for further training while 37.9% (n=25) were happy with their current level of training.

Graph 5.1 Most recent training received by service providers.

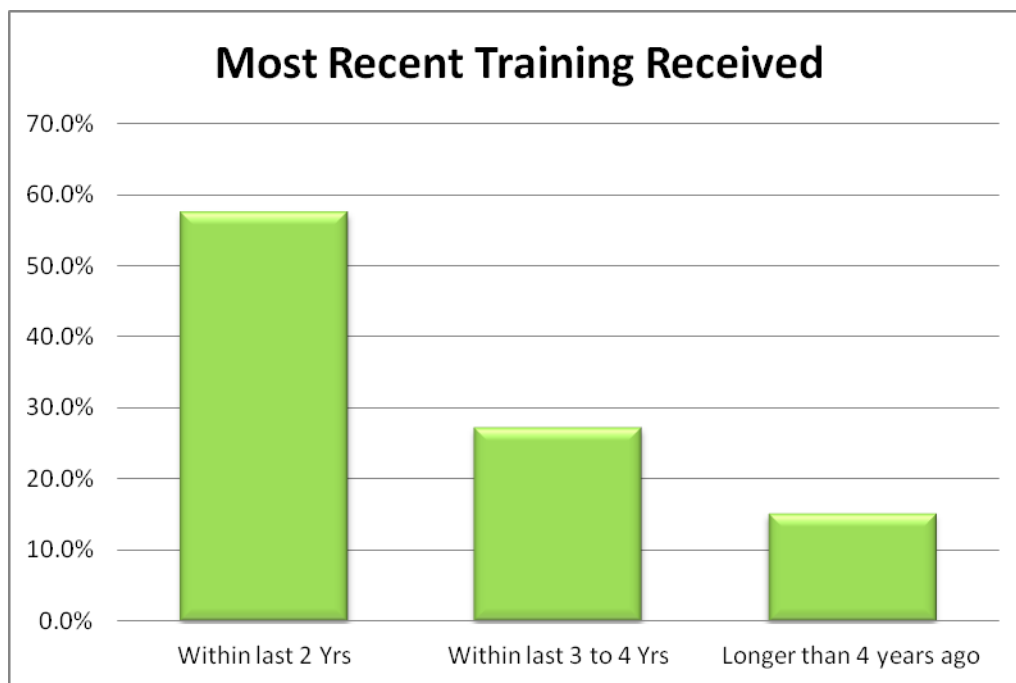


Table 5.1 Most recent training received by SPs.

Date of last Training	Frequency	%
Pre 2000	2	3
2001	0	0
2002	2	3
2003	6	9.1
2004	9	13.6
2005	9	13.6
2006	23	34.8
2007	15	22.7
Total	66	100

27.3% (n=18) within last 3 to 4 yrs.

15.2% (n=10) 4 or more years ago.

Showing most SPs had received training in the last 2 years at 57.9% (n=38)

Graph 5.2 Identifying the training needs that the SPs feel they require.



Table 5.2 Training needs as identified by SP's

Identified training Needs	%	Number
Non identified	45.6%	31
Interviewing techniques	10.3%	7
Training of trainers	8.8%	6
Smoking Cessation for youth	7.4%	5
Smoking Cessation for mental health	7.4%	5
Facilitation skills	4.4%	3
Certified SCT	4.4%	3
Information on Champix	2.9%	2
Clinical supervision	2.9%	2
Maudseley training	2.9%	2
Multiple addictions	1.5%	1
Intensive smoking cessation	1.5%	1

The top training needs identified were, **10.3% (7)** of SP's felt they needed further training in interviewing techniques and **8.8% (6)** felt they needed to learn more on how to deliver further training to smoking cessation trainers.

5.2.3 Professional Background of service providers:

Graph 5.3 The spread of professional backgrounds of SPs

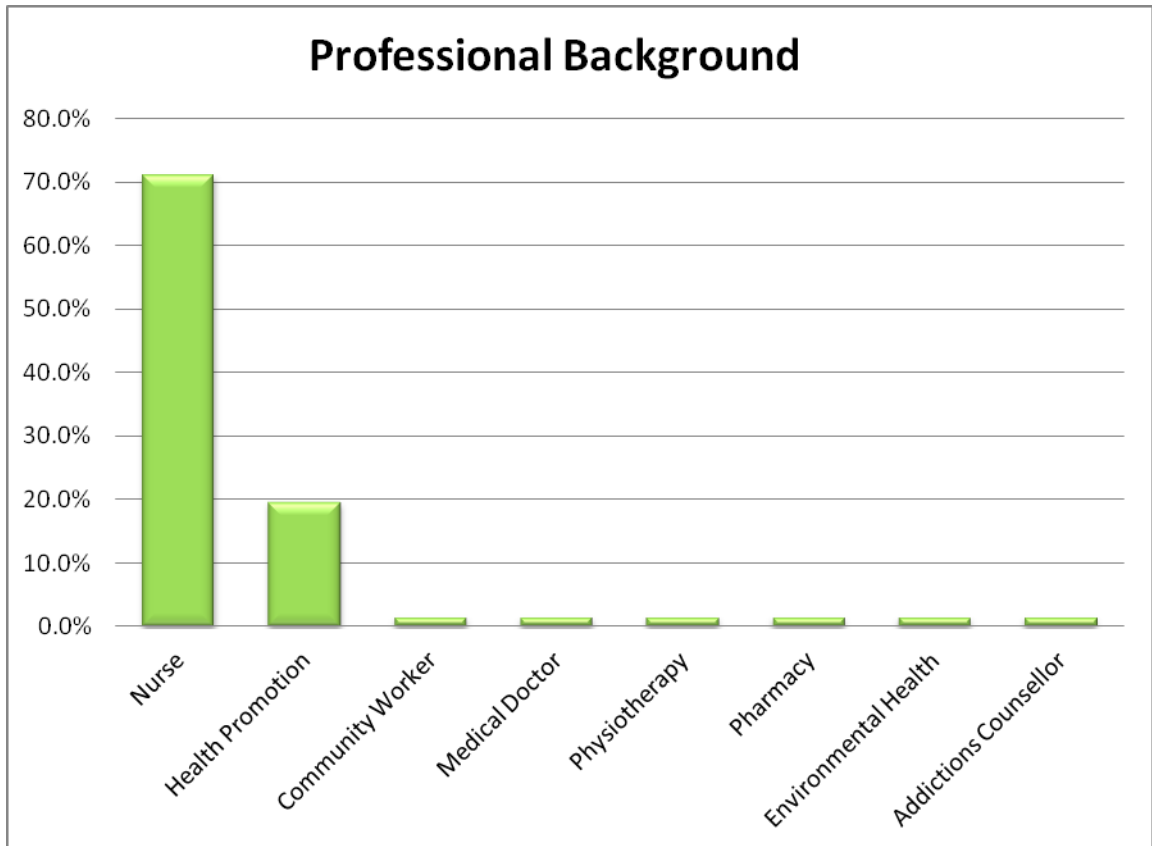


Table 5.3 Showing professional background of SP's

Professional Background	%	Number
Nurse	71.2%	47
Health Promotion	19.7%	13
Community Worker	1.5%	1
Medical Doctor	1.5%	1
Physiotherapy	1.5%	1
Pharmacy	1.5%	1
Environmental Health	1.5%	1
Addictions Counsellor	1.5%	1
Total	100.0%	66

The top 2 professional backgrounds for cessation service providers were:

71.2% (n=47) Nurse and 19.7% (n=13) Health Promotion.

5.2.4 Service availability

Graph 5.4 Populations to whom the cessation services declared they were available

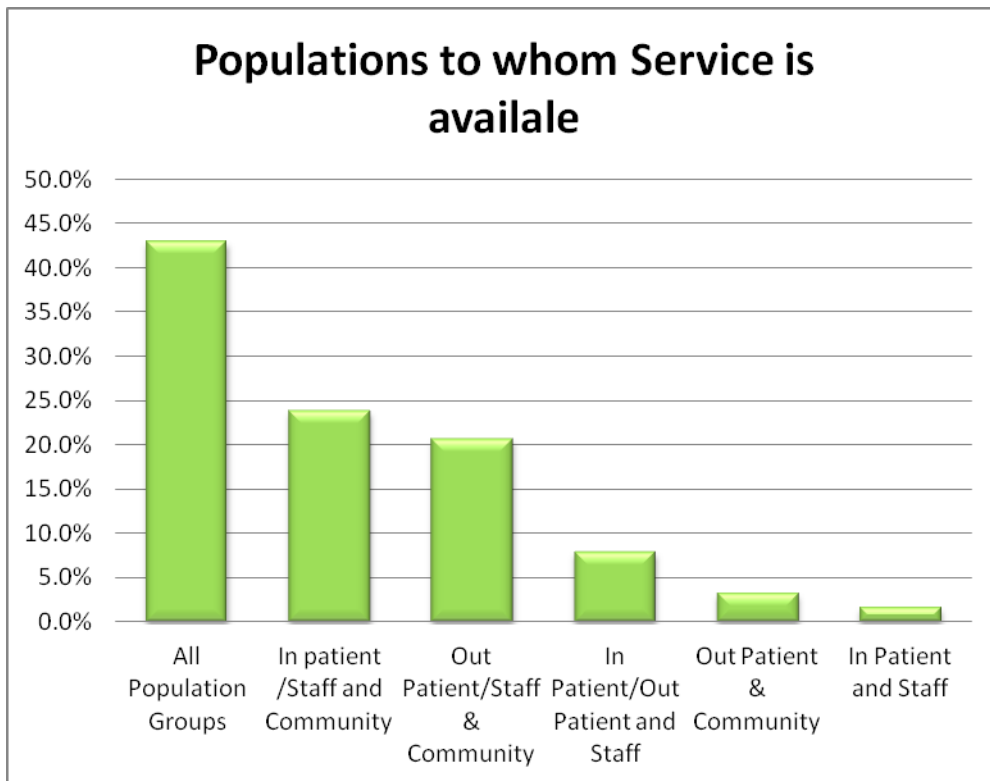


Table 5.4 Populations to whom the cessation services declared they were available.

Populations to whom services available	%	Number
All Population Groups	42.9%	27
In patient /Staff and Community	23.8%	15
Out Patient/Staff & Community	20.6%	13
In Patient/Out Patient and Staff	7.9%	5
Out Patient & Community	3.2%	2
In Patient and Staff	1.6%	1

The top 3 population groups served by cessation providers were:

42.9% (27) All population groups

23.8% (15) In patient/staff & community

20.6% (13) Out patient/staff & community

There was only one cessation service that said they were exclusively for the use of inpatients and staff.

5.2.5 Services provided

It was known that both telephone, one to one and group therapy was being offered but to what degree was not known.

Graph 5.5 **Types of services provided**

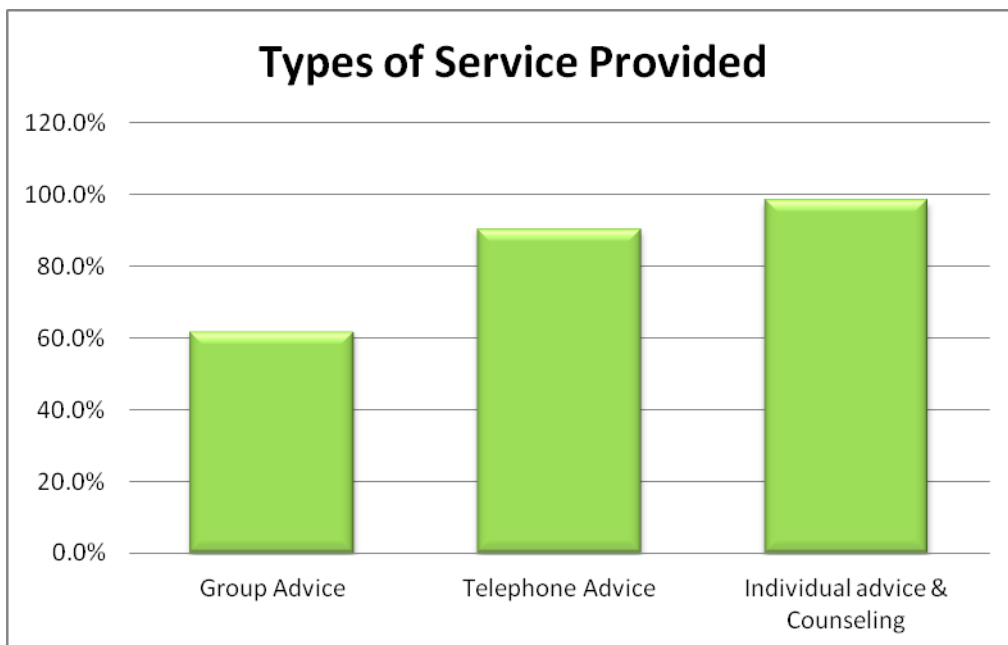


Table 5.5 Types of smoking cessation services provided.

Types of Service Provided	Frequency	%
Individual advice & Counselling	62	98.4%
Group Advice	39	61.9%
Telephone Advice	57	90.5%

Almost all of the 68 respondents provided individual advice & counselling and telephone support but only 61.9% (n=39) provide group advice or counselling.

5.2.6 Duration of consultations:

Initial individual sessions showed a mean duration of 40 min (range 10 -90mins).

Individual review sessions showed a mean duration of 23 min (range 5–60mins).

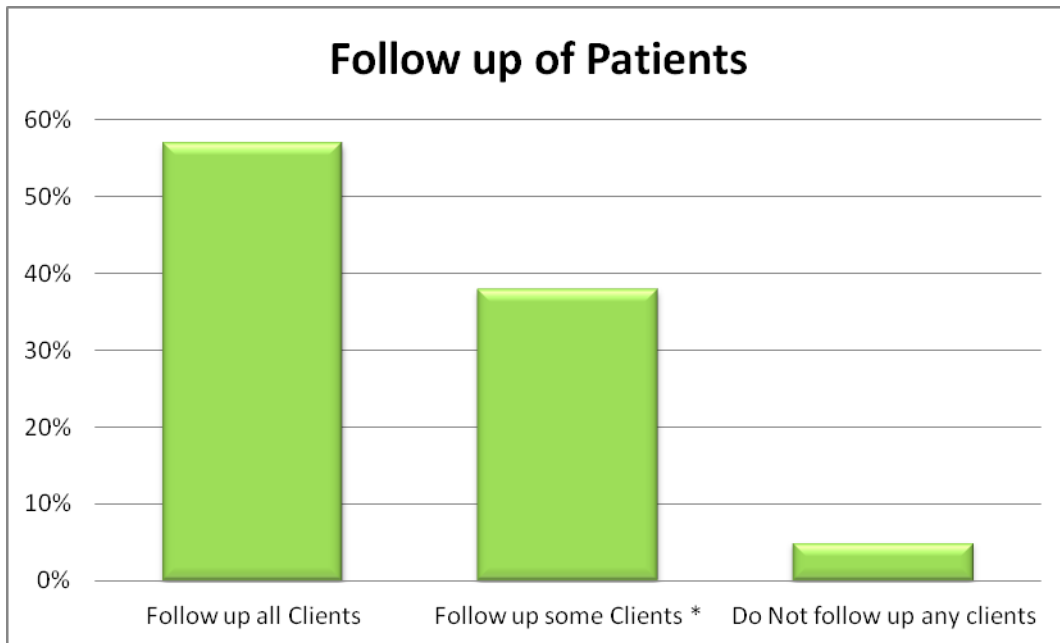
60% (n=38) provided individual support on a weekly basis.

Initial telephone sessions had a mean duration of 15 min and review sessions with a mean duration of 6 min.

5.2.7 Patient follow up:

There was not a standardised follow up identified, other than by the North Western region which represents 9.5% of the country's smoking cessation services.

Graph 5.6 **How many providers follow up patients?**



57.1% (n=36) follow up all patients, 38.1% (n=24) follow up some patients (*specifically those who have set a quit date), while only 4.8% (n=3) do not follow up any individuals.

How service providers set out their planned review of patients attending a smoking cessation service:

Graph 5.7 **Schedule of follow up contacts with patients:**

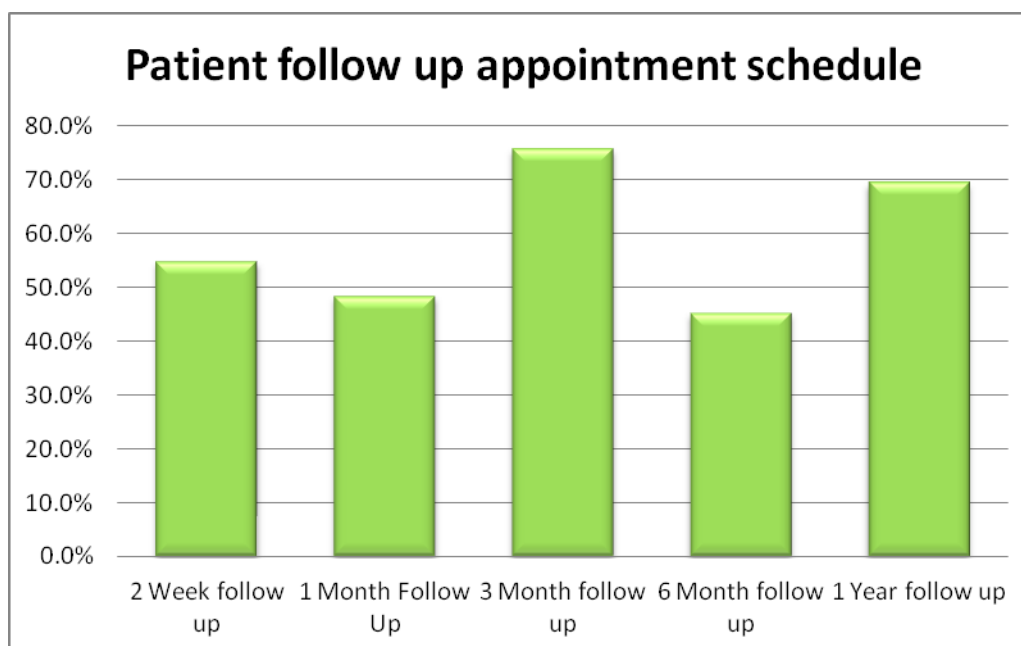


Table 5.6 **Schedule of patient follow up visits**

Follow up schedules	%	Frequency
2 Week follow up	54.8%	34
1 Month Follow up	48.4%	30
3 Month follow up	75.8%	47
6 Month follow up	45.2%	28
1 Year follow up	69.4%	43

Most common follow ups are conducted at 2 weeks 50% (34), 3 months 75.8% (47) and 1 year 69.4% (43).

5.2.8 Use of CO monitor as a means of validating quit status of patients:

Graph 5.8 **Number of providers who use CO as a means of validating quit status**

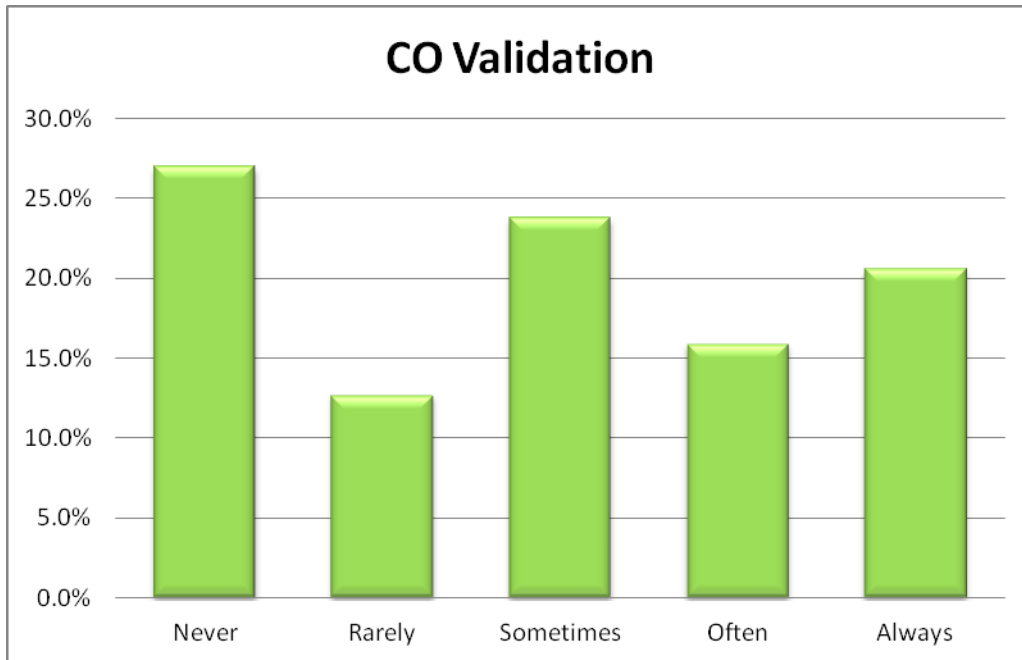


Table 5.7 **Frequency of CO Validation by SP's**

Frequency of CO Validation	%	Frequency
Never	27.0%	17
Rarely	12.7%	8
Sometimes	23.8%	15
Often	15.9%	10
Always	20.6%	13
Total	100%	63

- 27% (17) Never use CO validation.
- 36.5% (23) Rarely or sometimes use CO validation.
- 36.5% (23) Use it often or always.
-

5.2.9 Geographical spread of services

Graph 5.9 Regional spread of hours of cessation service per week

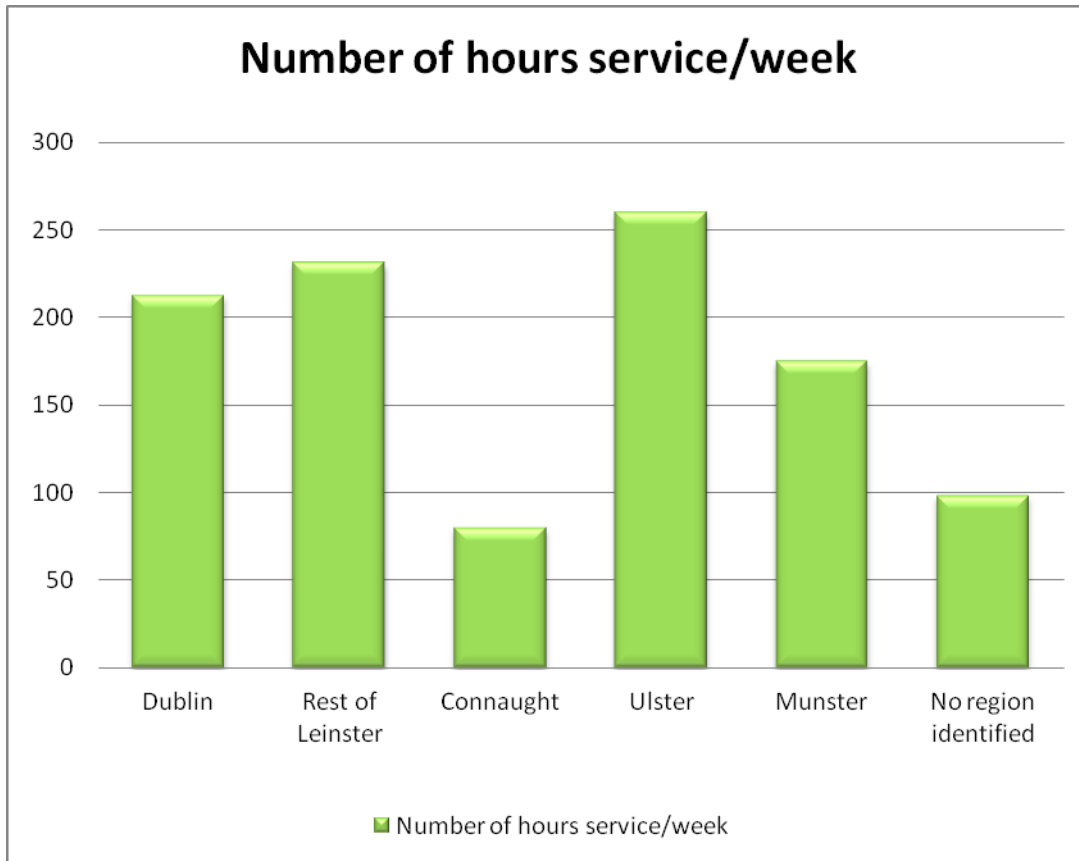


Table 5.8 Hours of service per week in the different regions

Province/Region	No. of Responses	No. hours/week	Proportion of total hours/week
Dublin	17	212.5	20.10%
Rest of Leinster	20	231	21.90%
Connaught	7	80	7.70%
Ulster	13	260.1	24.60%
Munster	15	175	16.70%
No region identified	1	98	9.00%
Totals	72	1056.6	100.00%

Shows the distribution of services throughout the country in hours delivered. The service in Dublin and the rest of Leinster represents 41% of the total hours of service reported in this survey (Currie et al., 2010).

5.2.10 Setting of smoking cessation services

Graph 5.10 Setting of smoking cessation services.

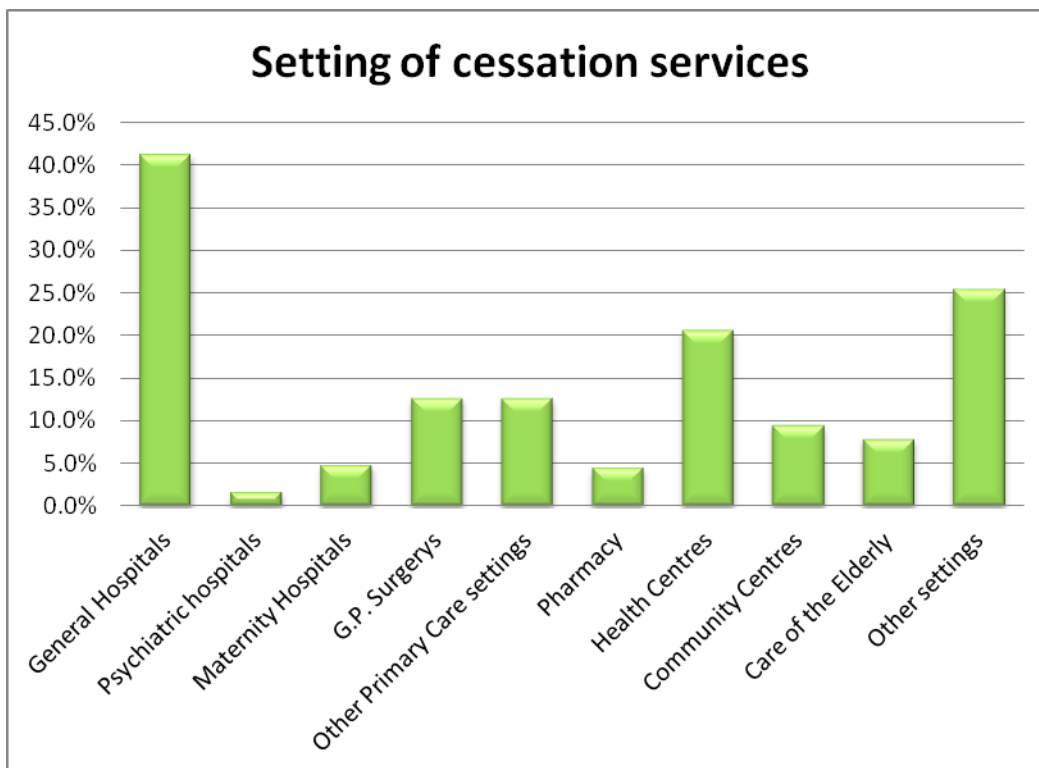


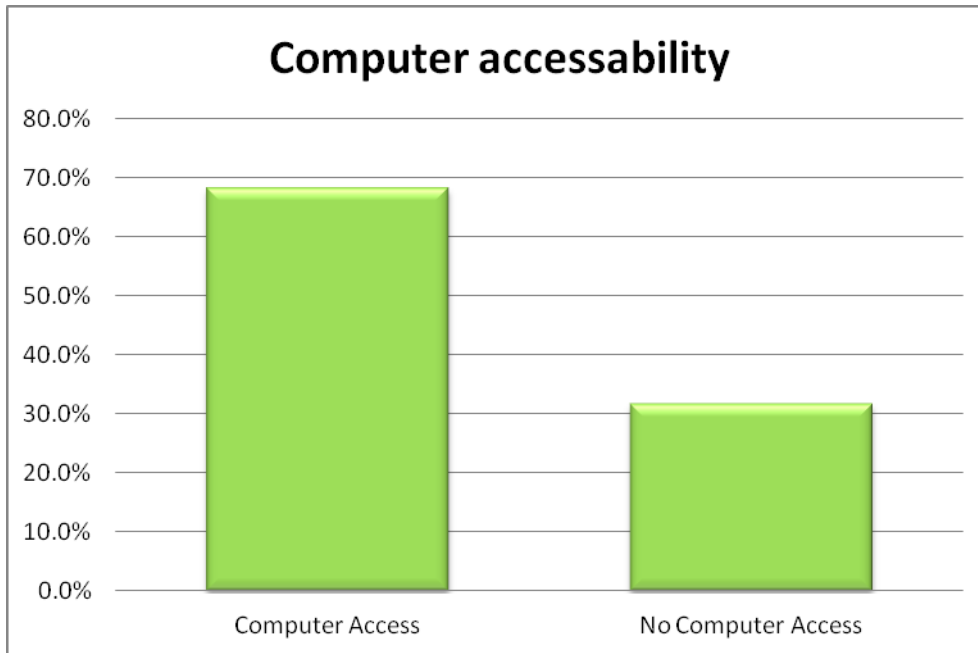
Table 5.9 Where cessation services are delivered

Setting of Service	%	Frequency
General Hospitals	41.3%	26
Psychiatric Hospitals	1.6%	1
Maternity Hospitals	4.8%	3
G.P. Surgeries	12.7%	8
Other Primary Care settings	12.7%	8
Pharmacies	4.5%	3
Health Centres	20.6%	13
Community Centres	9.5%	6
Care of the Elderly	7.9%	5
Other settings	25.4%	16

47.7% (30) hours are hospital based. There was only 1 psychiatric hospital identified as having a service.

5.2.11 Computer accessibility and data collection:

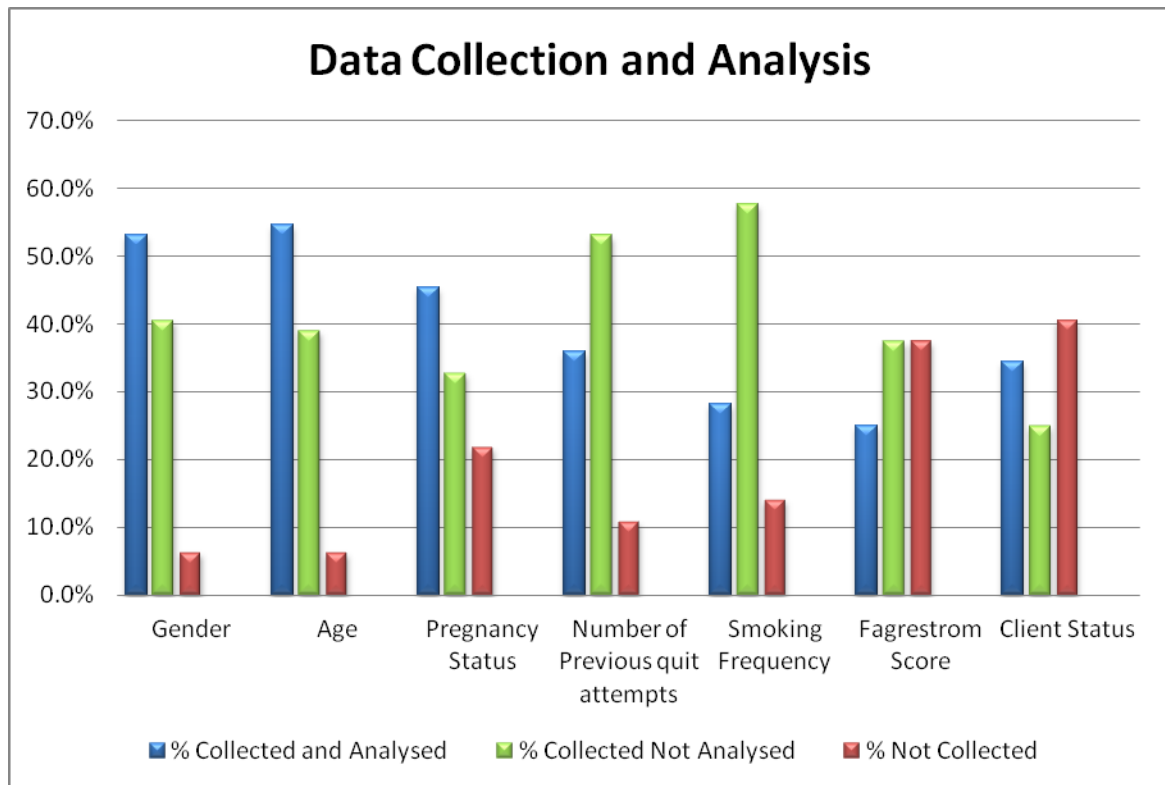
Graph 5.11 How many service providers have access to computers?



Almost 1/3rd of service providers 31.7% (19) have **no** access to a computer.

5.2.12 Data collection and analysis

Graph 5.12 Data collected by service providers and whether it was analysed or not.



A surprisingly large amount of data is collected by service providers and is not being reported on or analysed. The largest amounts of unanalysed/unreported data collected are: Smoking frequency **57.8% (37)** and number of previous quit attempts **53.1% (34)** but even routine data such as age **39.1% (25)** and gender **40.6% (26)** are left unanalysed.

5.3 Smoking cessation treatment database

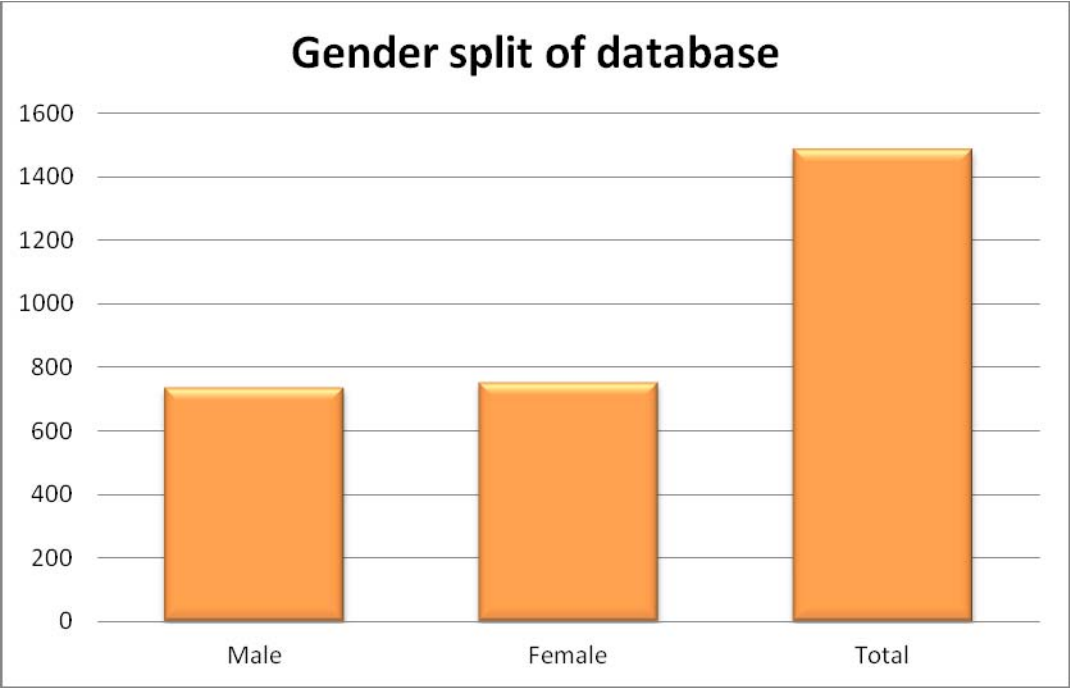
5.3.1 Sample

49 service providers agreed to participate in the pilot use of the newly developed treatment database. Using this database a 3 month study was conducted of patients recruited cross-sectionally while attending the 49 participating smoking cessation services throughout Ireland. 41 completed databases were received, 2 of which were not included as they were not suitable for analysis, the data was collected in an Access database and not in the specially developed Excel based database. It was not possible to match the data fields that these 2 providers collected in their own existing Access database as they differed too much from those set out in the piloted treatment database. A total of 1,490 patients were recruited and subsequently analysed from the remaining 39 databases received. A number of written and phone requests to the outstanding 8 service providers were made to no avail. This gave a response rate of almost 84%.

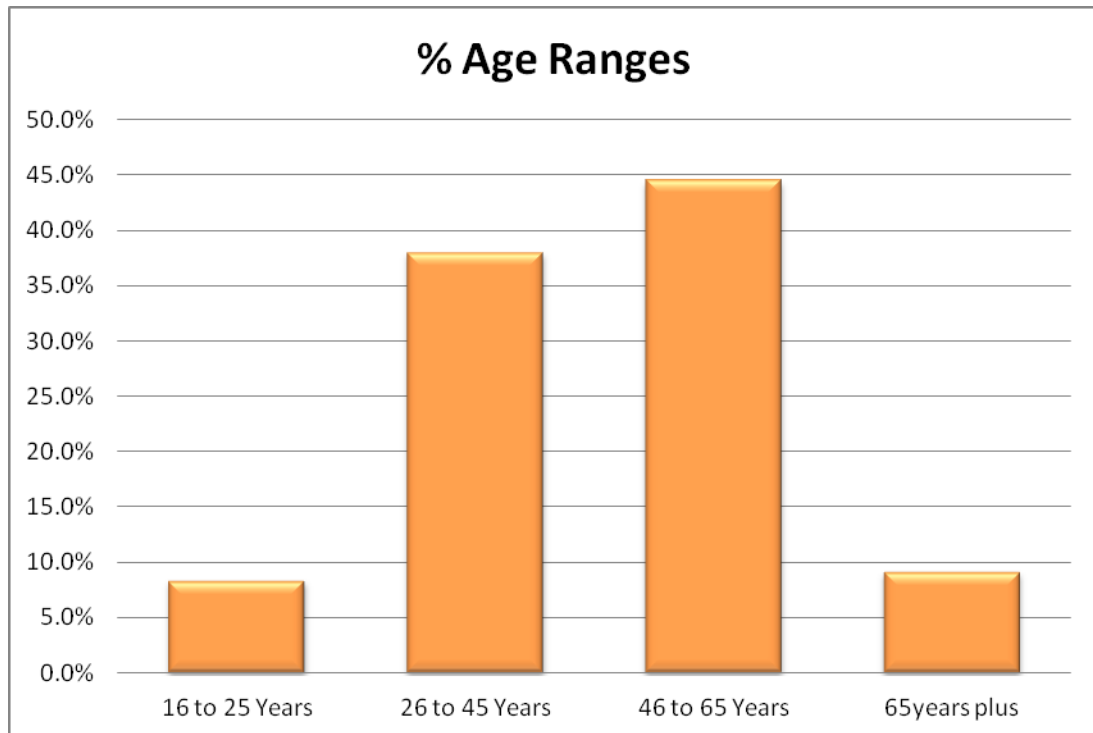
5.3.2 Subject demographics

Of the 1490 patients entered into the treatment database there was a fairly even gender split with 736 Females and 752 males treated, gender data was missing on 2 patients this gender split is in keeping with the statistics from the 2011 national census.

Graph 5.13 **Males (n=752) Females (n=736) and total number of patients analysed.**
(n=1488)



Graph 5.14 Age distribution of the study subjects (n=1402).



From a total of 1402 patients whose age was recorded this graph shows the spread of the age ranges captured during the 3 month pilot of the treatment database. Age was missing or incorrectly entered on 88 patients. The majority of patients were between 46 and 65 years of age.

5.3.3 The overall quit rates recorded in the treatment database.

Quit rates were recorded at 4 weeks and 3 months using the Russell Standard definition of quit, a patient was considered to have quit at 4 weeks if they were assessed (face to face, by postal questionnaire or by telephone) 4 weeks after their quit date and declared that they had not smoked a single puff on a cigarette in the past 2 weeks.

A patient was considered to have quit at 3 months if they were assessed (face to face, by postal questionnaire or by telephone) 3 months after their quit date and declared that they had not smoked more than 5 cigarettes in the past 10 weeks.

Graph 5.15 Quit rate (%) of all patients entered

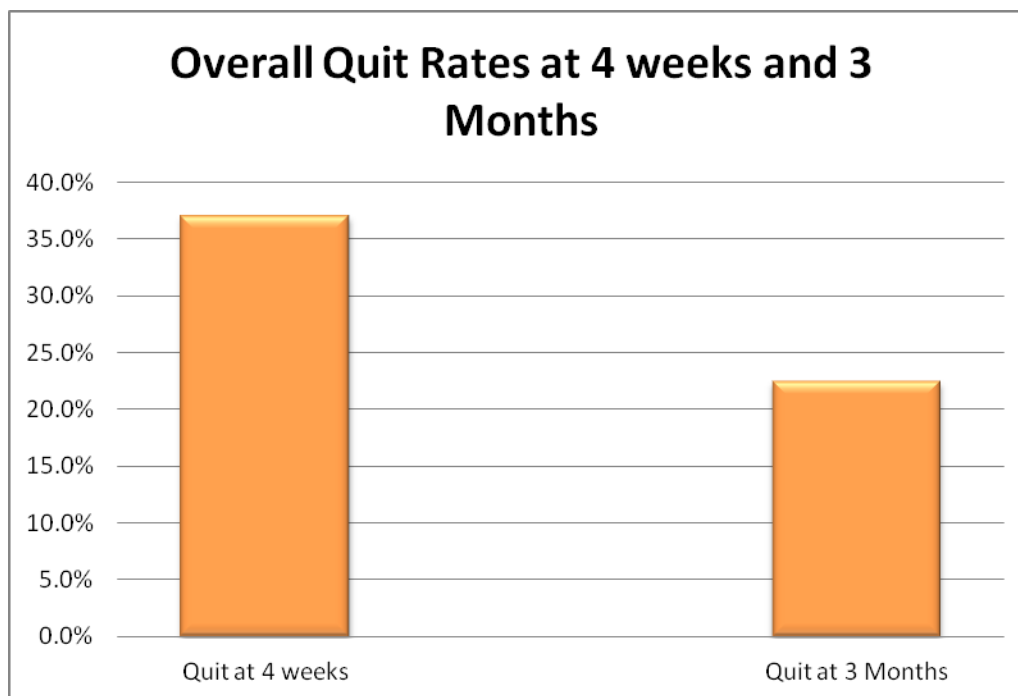


Table 5.10 Quit rate results at 4 weeks and 3 months

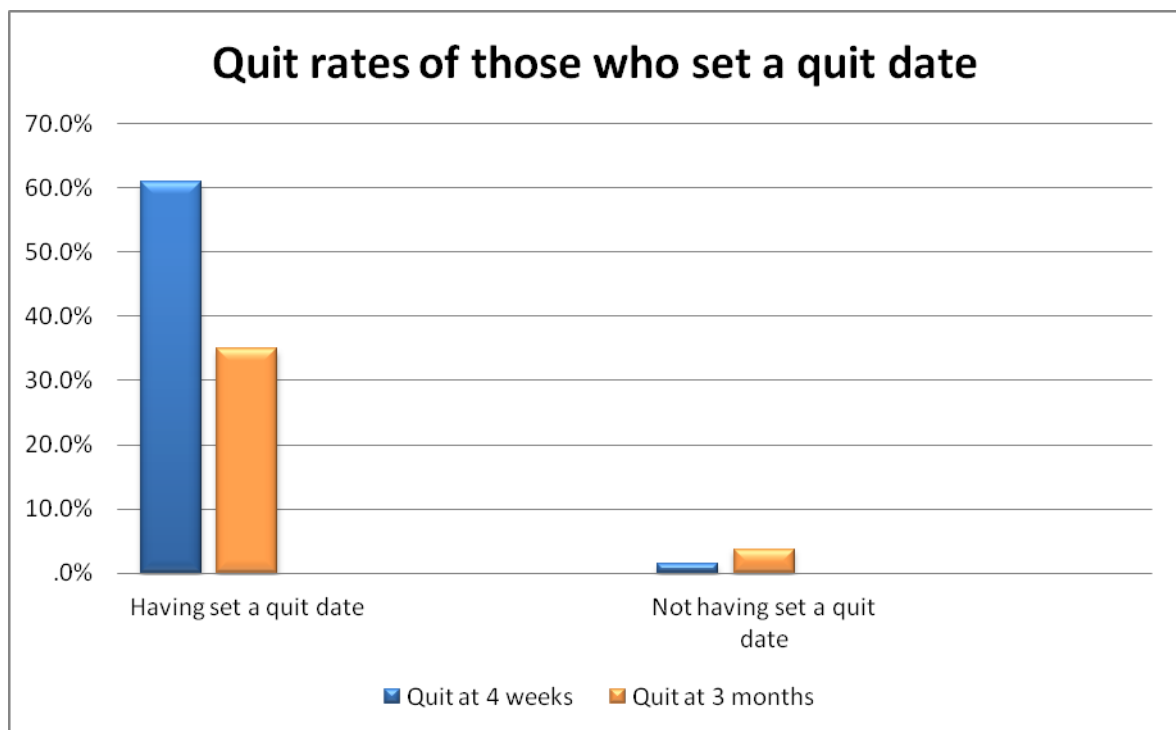
	Frequency		Frequency	
	Quit	%	Not Quit	%
4 Weeks	552	37%	936	62.8
3 months	334	22.4%	1151	77.3

The overall quit rates of those who attended for smoking cessation treatment regardless of setting a quit date, were 37% at 4 weeks and this rate fell to 22.4% at 3 months.

5.3.4 Setting of quit date

Not all patients attending a service set a quit date. Some may only be contemplating quitting and need to be motivated and helped in preparing for their quit attempt. This next graph demonstrates how important it is to progress patients to this stage.

Graph 5.16 Quit rates (%) amongst those who had set a quit date (n=890) compared to those who did not set a quit date (n=600).

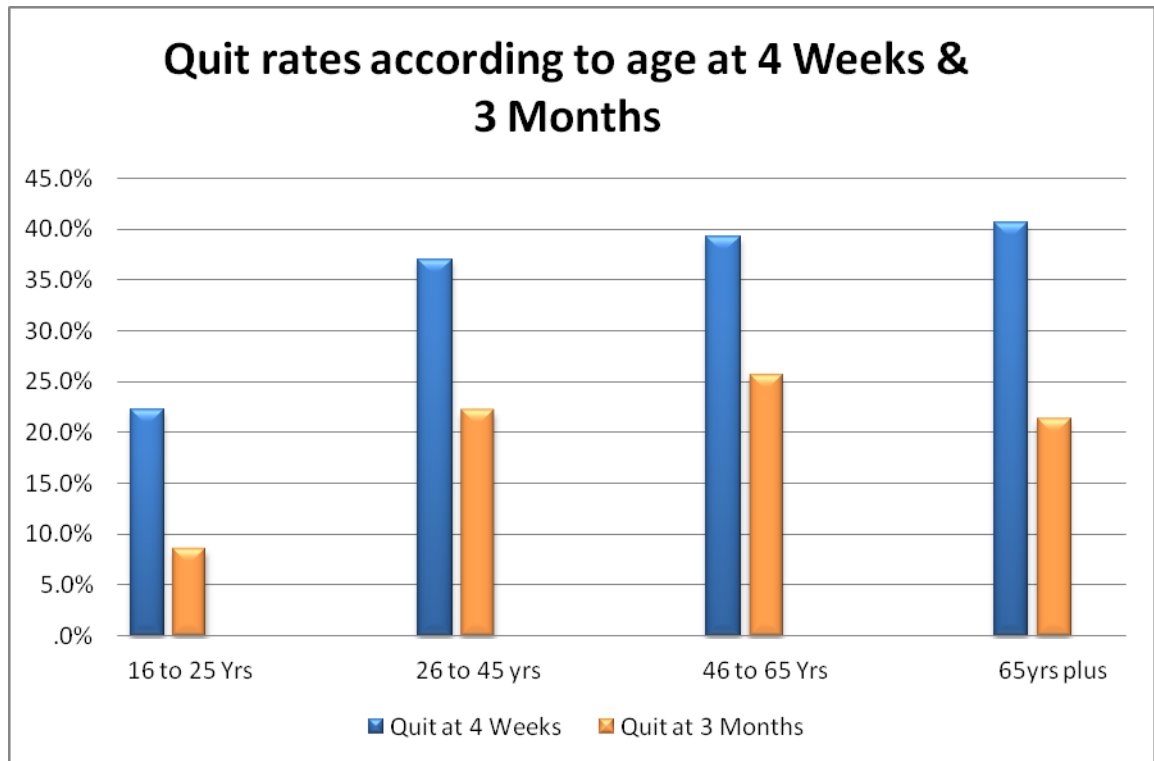


$\chi^2 = 545.372$, (2) $P < 0.05$ at 4 weeks

$\chi^2 = 200.809$, (2) $P < 0.05$ at 3 months

61% of patients who set a quit date (n=890) were quit at 4 weeks. This fell to 35% at 3 months. Of those who did not set a quit date (n=600) there were 1.4% quit at 4 weeks and 3.8% quit at 3 months.

Graph 5.17 Quit rates according to age ranges (n=1402) at 4 weeks and 3 months



$\chi^2 = 14.359a$, (6) $P = 0.053$ at 4 weeks

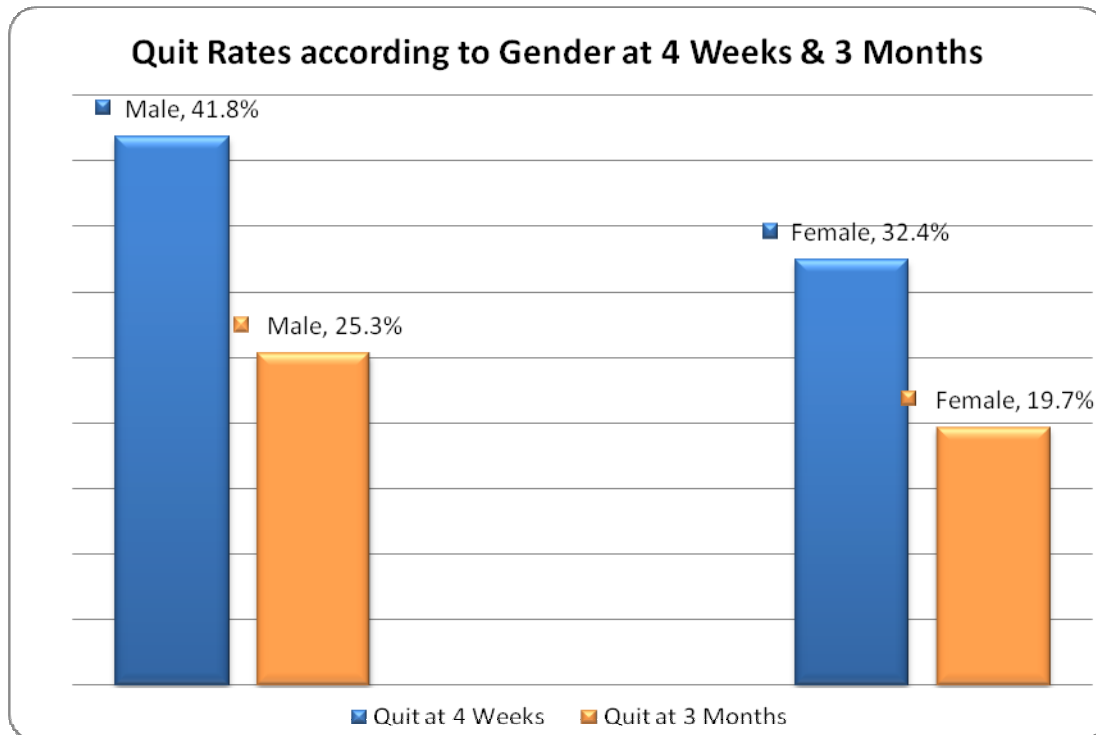
$\chi^2 = 38.221a$, (6), $P < 0.05$ at 3 months

Table 5.11 Numbers of quit rates recorded within age ranges

Data on age range Quit at	Number	%
4 weeks	1402	94.1
3 Month	1401	94

Showing quit rates by age demonstrates that the older age groups are statistically more likely to quit than their younger counterparts at 3 Months. The quit rate in all age groups falls from 4 weeks to 3 months.

Graph 5.18 Quit rates according to age and gender



$\chi^2 = 14.102a$, (2), $P < 0.05$ at 4 weeks.

$\chi^2 = 7.958a$, (2), $P < 0.05$ at 3 Months.

Graph 5.18 shows quit rates at 4 weeks to be 41.8% of Males and 32.4% of Females falling to 25.35% and 19.7% respectively at 3 months, showing that males have significantly higher quit rates compared to female quit rates in the study population for both time periods- 4 week and 3 months.

5.3.4 Smoking history

The number of cigarettes smoked per day and the Fagerstrom score were calculated and scored 0-3 low addiction, 4-5 medium addiction and 6-10 high addiction in order to determine the degree of addiction of each patient.

Number of cigarettes smoked daily:

Out of a total of 1,436 patients whose daily smoking rate was recorded, 400 (27.9%) reported smoking less than 20 per day, while 1036 (72.1%) patients reported smoking more than 20 per day. While the exact number of cigarettes smoked per day was recorded for analysis they were divided into 5 different categories; 0-10, 11-19, 20-29, 30- 39 and 40+.

Graph 5.19 Breakdown of number of cigarettes smoked by patients within the dataset

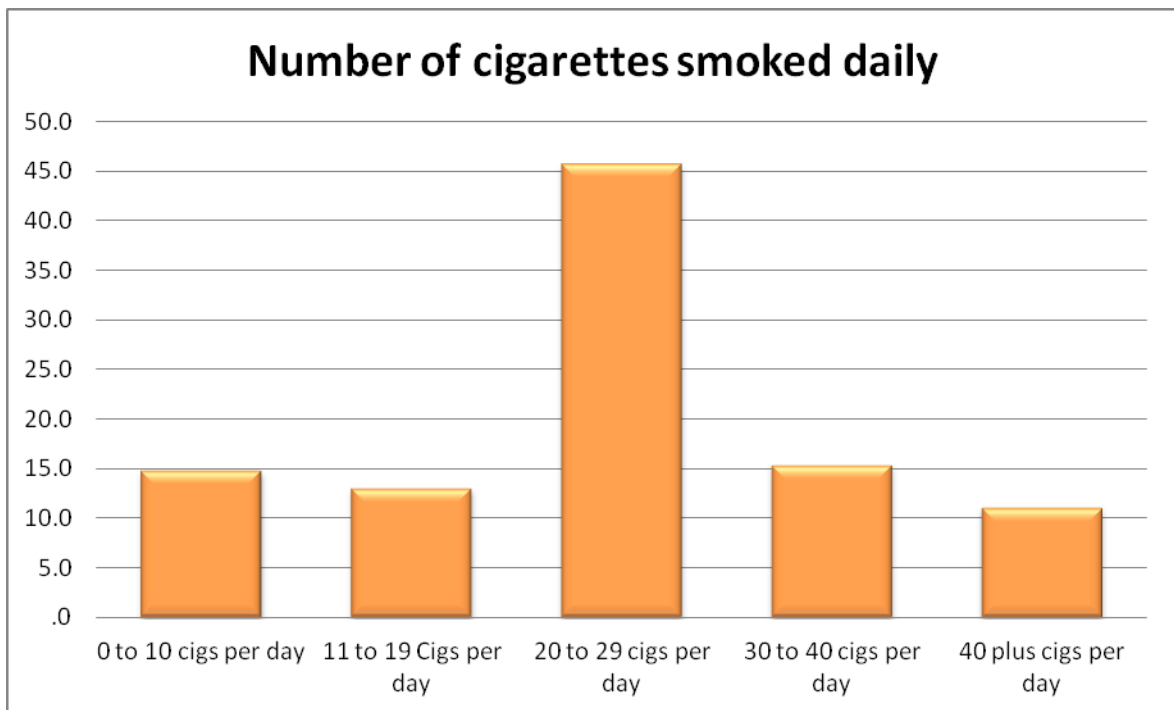
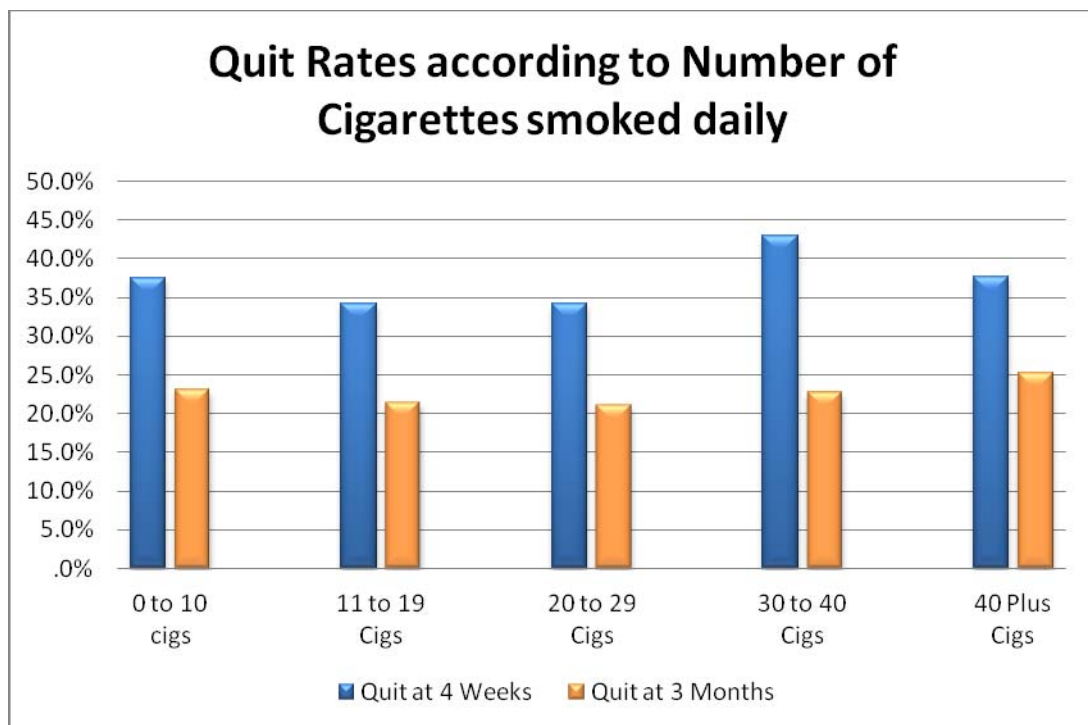


Table 5.12 Numbers of cigarettes smoked per day

Numbers smoked per day	Frequency	%
0 to 10 cigs per day	213	14.8
11 to 19 cigs per day	187	13.0
20 to 29 cigs per day	656	45.7
30 to 40 cigs per day	221	15.4
40 plus cigs per day	159	11.1
Total	1436	100.0

Quit rates within number of cigarettes smoked.

Graph 5.20 Quit rates according to number of daily cigarettes smoked



$\chi^2 = 8.452$ (8), $P = 0.391$ at 4 weeks

$\chi^2 = 15.244$ (8), $P < 0.05$ at 3 months

Quit rates according to number of cigarettes smoked by individuals was statistically significant at 3 months: heavier smokers were shown to be more likely to remain quit at 3 months 25.2% (n=159) than lighter smokers 22.2% (n=400)

Fagerstrom score

The addiction level of the smoker was recorded by calculating their Fagerstrom score. This was recorded in 1440 of the 1490 patients entered. This did not prove to be a statistically significant predictor of quit rates.

Graph 5.21 **Distribution of the Fagerstrom scores across the patient population in the dataset.**

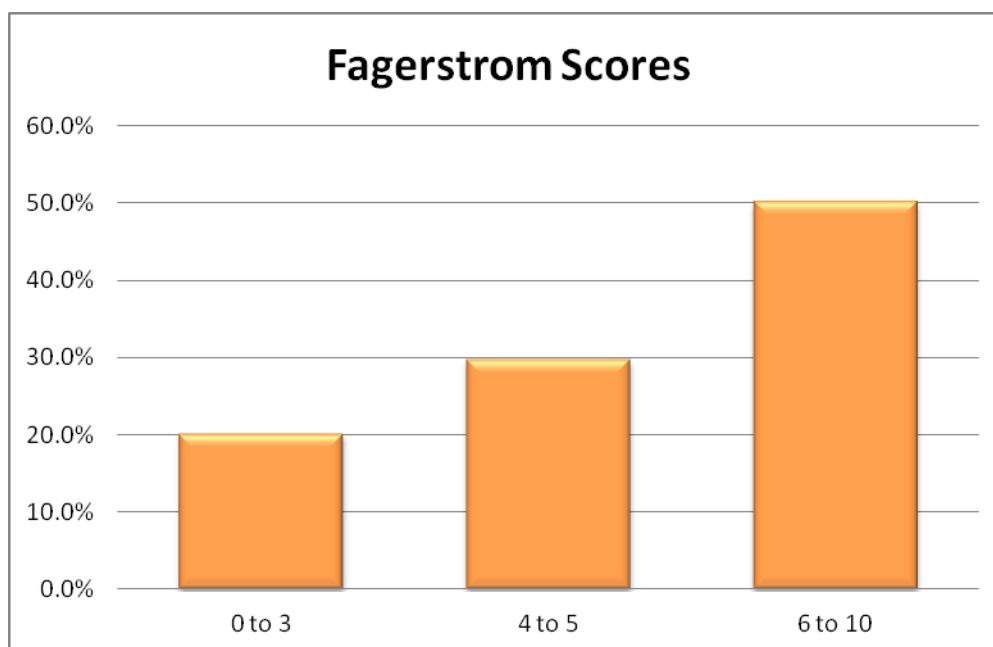
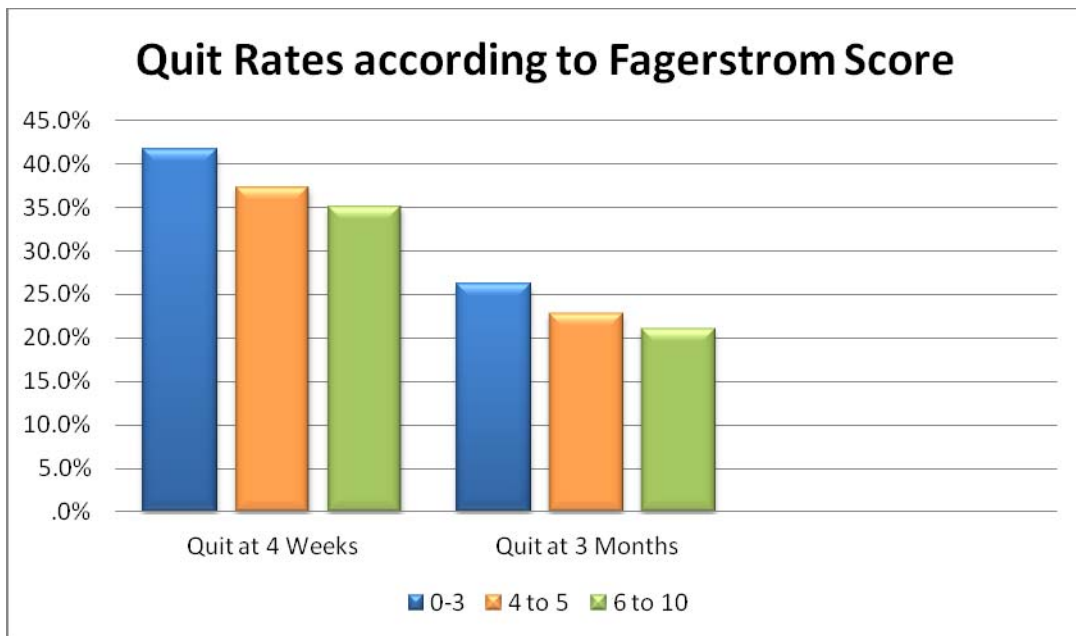


Table 5.13 Recording of Fagerstrom score

Fagerstrom Scores	Numbers	%
0-3	290	20.1
4-5	428	29.7
6-10	722	50.1
Total	1440	100

The largest portion of the dataset had a high Fagerstrom score of 6-10 @ 50 % (n=722) demonstrating a high level of tobacco dependency.

Graph 5.22 Quit rates according to Fagerstrom scores



The quit rates according to the patients Fagerstrom score: while the results are not statistically significant it does show a trend for the higher the degree of dependency the lower the quit rate.

$\chi^2=8.566a$, (4), $P = .073$ at 4 weeks.

$\chi^2=6.905a$, (4), $P = .141$ at 3 Months.

5.3.5 Social class/ occupation

The entire population was classified into one of the following social class groups which are defined on the basis of occupation:

1. Professional worker
2. Managerial and technical
3. Non manual
4. Skilled manual
5. Semi-skilled
6. Unskilled
7. All others gainfully occupied and unknown is used where no precise allocation is possible.

Graph 5.23 Social class/occupation groups within the dataset

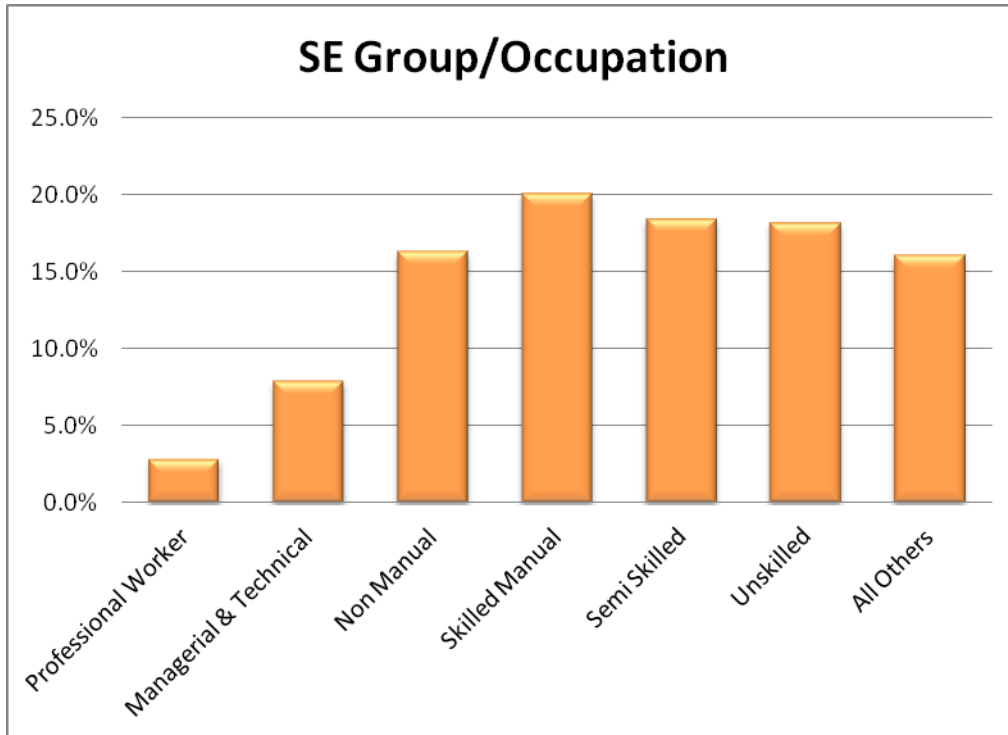
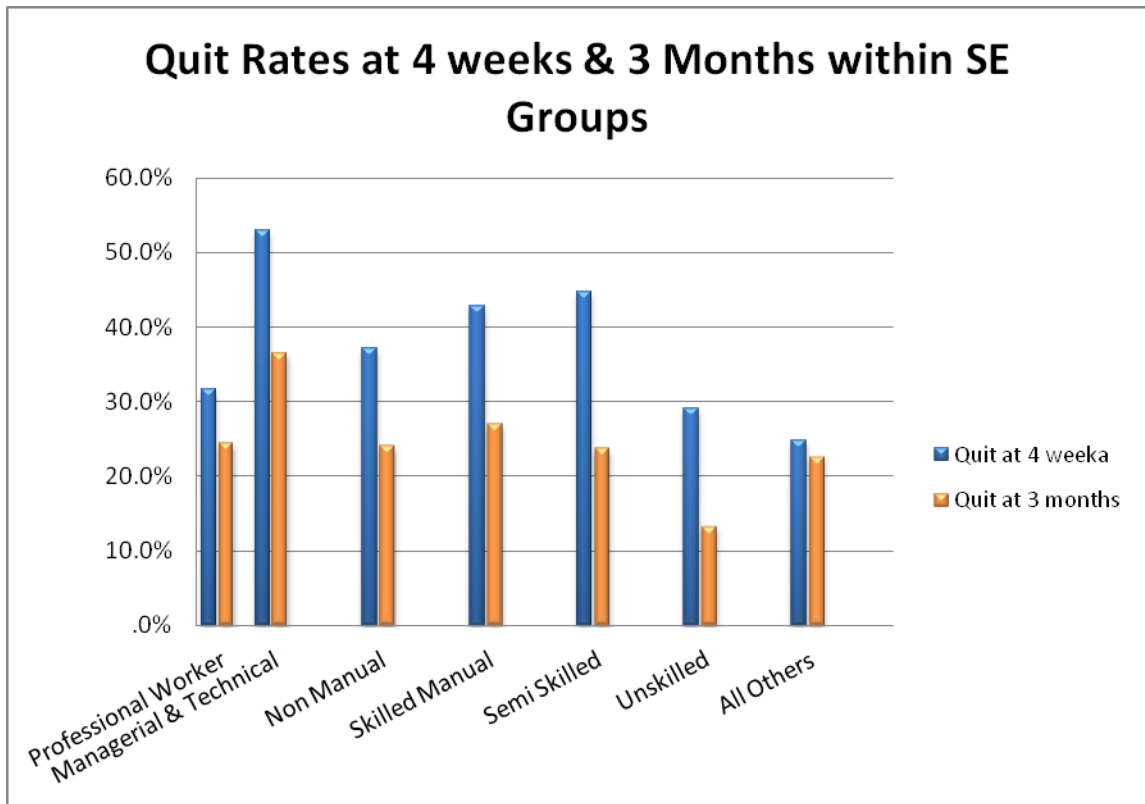


Table 5.14 Social classes within the dataset.

Social class/occupation	Frequency	%
Professional Worker	41	2.8
Managerial & Technical	115	7.9
Non Manual	237	16.3
Skilled Manual	292	20.1
Semi-Skilled	271	18.6
Unskilled	264	18.2
All Others	234	16.1
Total	1454	100

Graph 5.24 Quit Rates (%) by Social Class/Occupation (n=1454)



Quit rates by occupation was shown to be statistically associated with quit rate at 4 weeks and 3 months.

$\chi^2=49.668a$ (12), $P < 0.05$ at 4 weeks.

$\chi^2=34.296a$ (12), $P < 0.05$ at 3 months.

Table 5.15 Quit rates within SE groups

SE Groups	Total within each group	Quit at 4 weeks	Quit at 3 months
Professional Worker	41	13	10
Managerial & Technical	115	61	42
Non Manual	237	88	57
Skilled Manual	292	125	79
Semi-Skilled	271	121	64
Unskilled	264	77	45
All Others	234	58	31
Total	1454	543	328

When these were grouped into SE groups 1-3 this demonstrated quit rates of 41% at 4 weeks and 28% at 3 months while SE groups 4-6 demonstrated quit rates of 39% at 4 weeks and 23% at 3 months.

5.3.6 Patients primary motivation to quit

Graph 5.25 Patient's primary motivation to quit in the dataset. (n=1425)

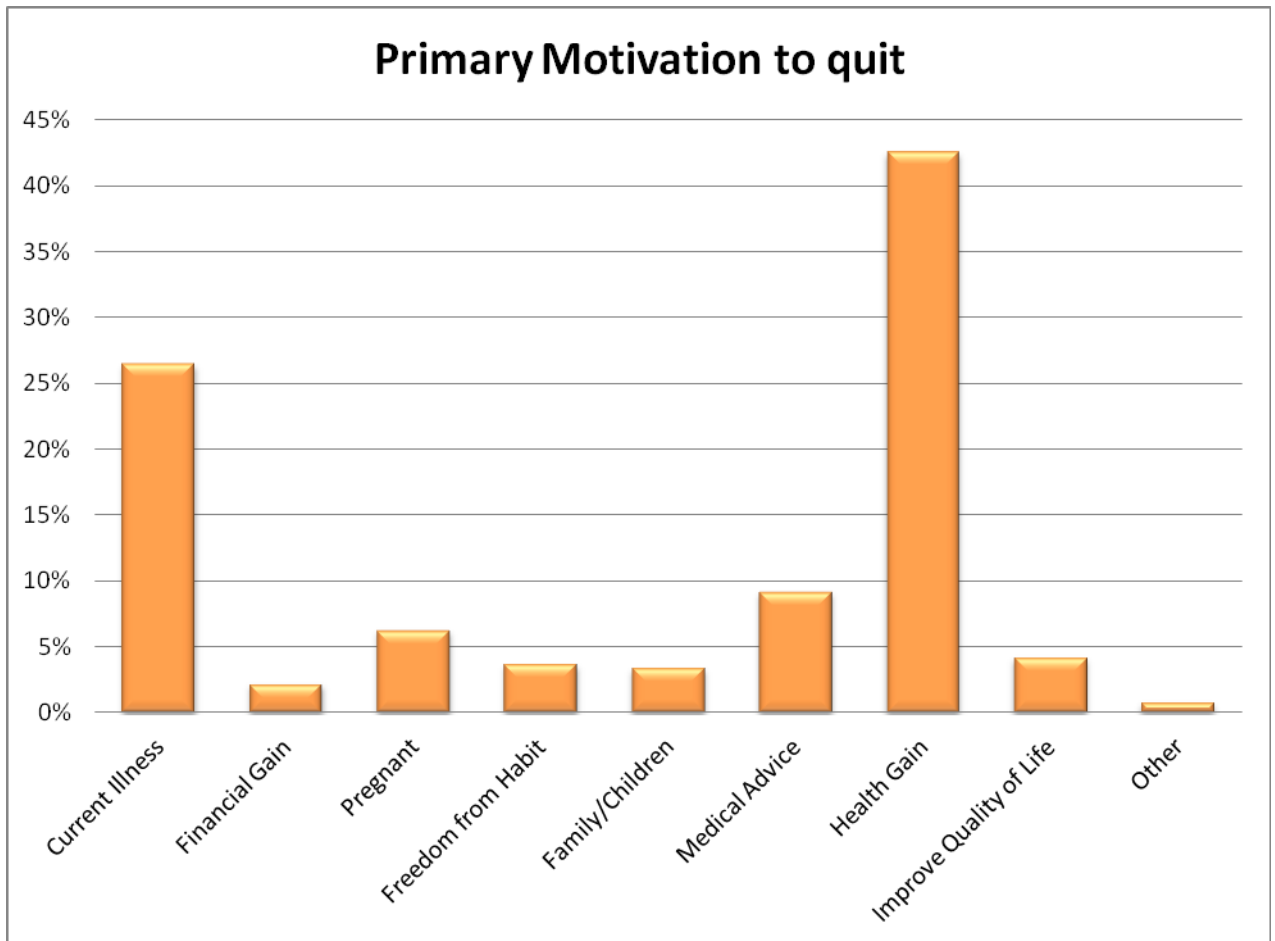
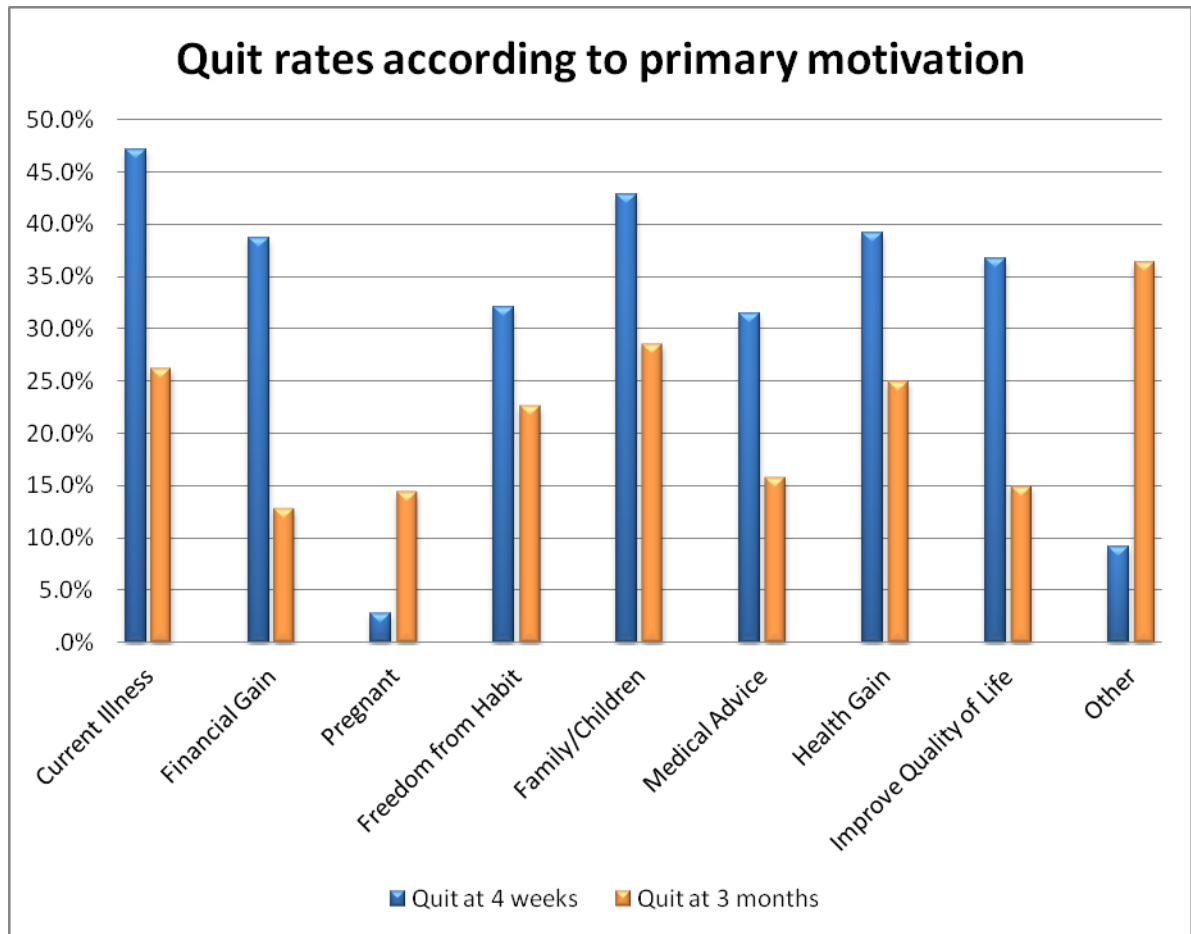


Table 5.16 Patients Primary motivation to quit.

Primary Motivation to Quit	%	Number
Current Illness	27%	378
Financial Gain	2%	31
Pregnant	6%	90
Freedom from Habit	4%	53
Family/Children	3%	49
Medical Advice	9%	146
Health Gain	43%	607
Improve Quality of Life	4%	60
Other	1%	11
Total	100%	1425

Health was overwhelmingly the primary motivation to quit smoking at 69.1% (985)

Graph 5.26 Quit rates according to Primary reason for quitting



$\chi^2=44.564^a$ (16), $P < 0.05$ at 4 weeks.

$\chi^2=22.956^a$ (16), $P = 0.115$ at 3 Months

Primary motivation for quitting is statistically significant at 4 weeks but does not seem to be a factor in maintaining abstinence at 3 months most notably in the motivation of ‘financial gain’ which had a quit rate of 38.7% at 4 weeks and only 12.9% at 3 months.

5.3.7 Pregnancy

118 patients entered into the database were reported as pregnant which represents 15.6% of the total female numbers.

Graph 5.27 Number of pregnant and non-pregnant women within the dataset.

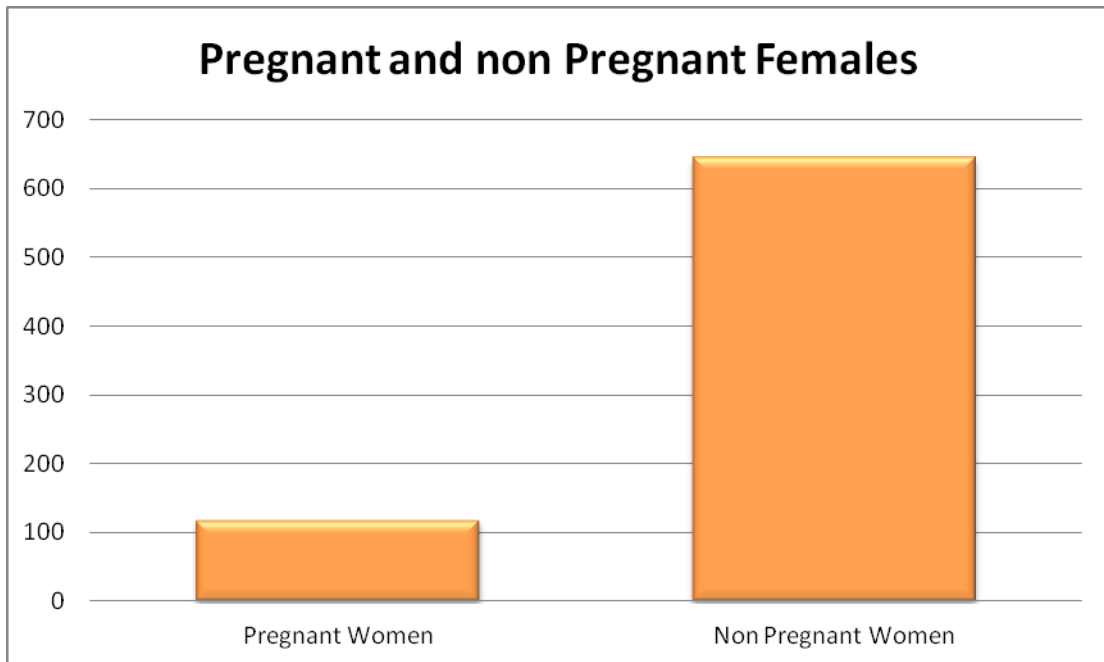
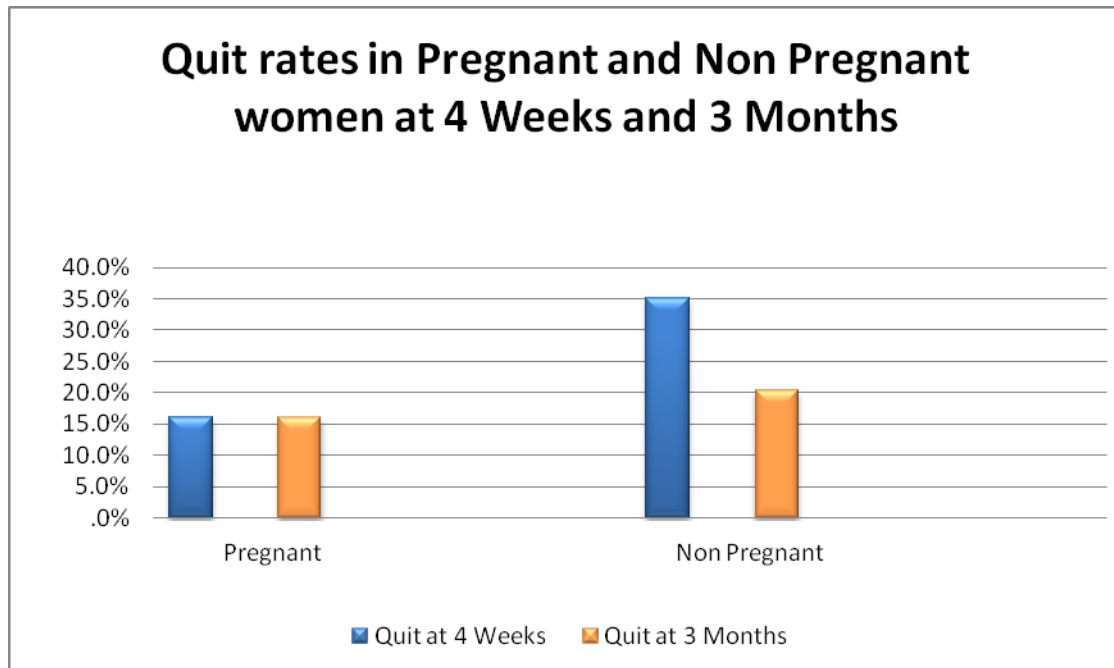


Table 5.17 Pregnant and non-pregnant women.

Pregnant	Frequency	%
No	634	84.3
Yes	118	15.6
Total	752	100

Graph 5.28 Showing quit rates amongst pregnant and non-pregnant women.



$\chi^2 = 15.485$ (2), $P < 0.05$ at 4 weeks.

$\chi^2 = 7.054$ (2), $P < 0.05$ at 3 months.

Of the 118 pregnant women the quit rate was 16.5% at both 4 weeks and at 3 months. This compares with 35.2% at 4 weeks and 20.3% at 3 months of the non-pregnant female population in the study.

5.3.8 Quit rates by quitting method:

Graph 5.29 Methods used to aid quit attempt.

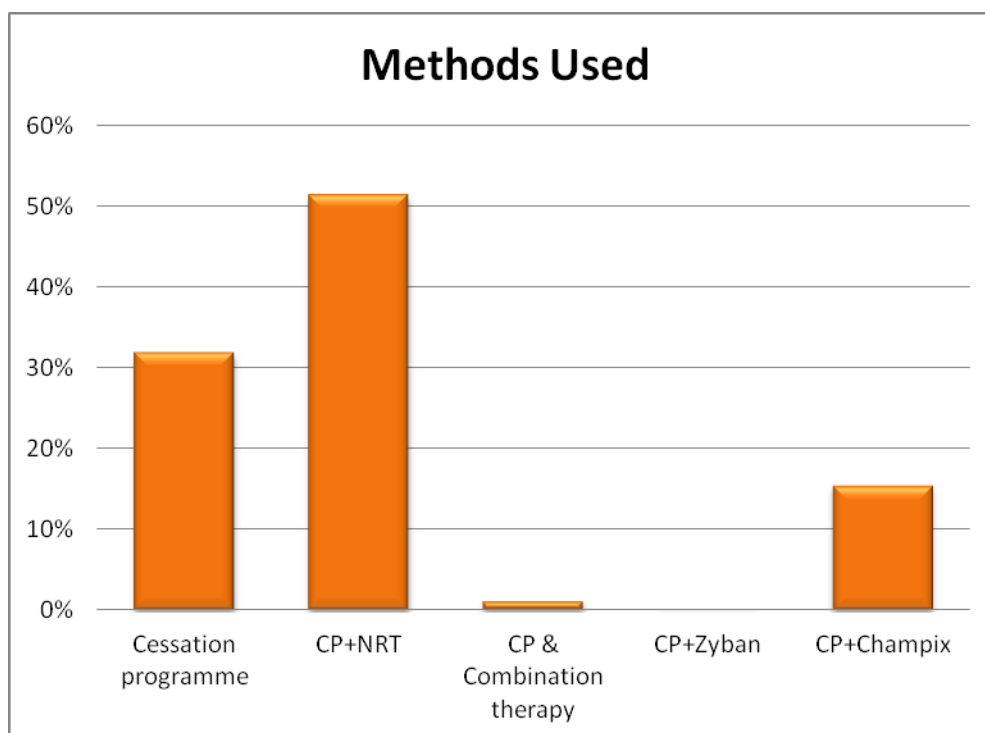
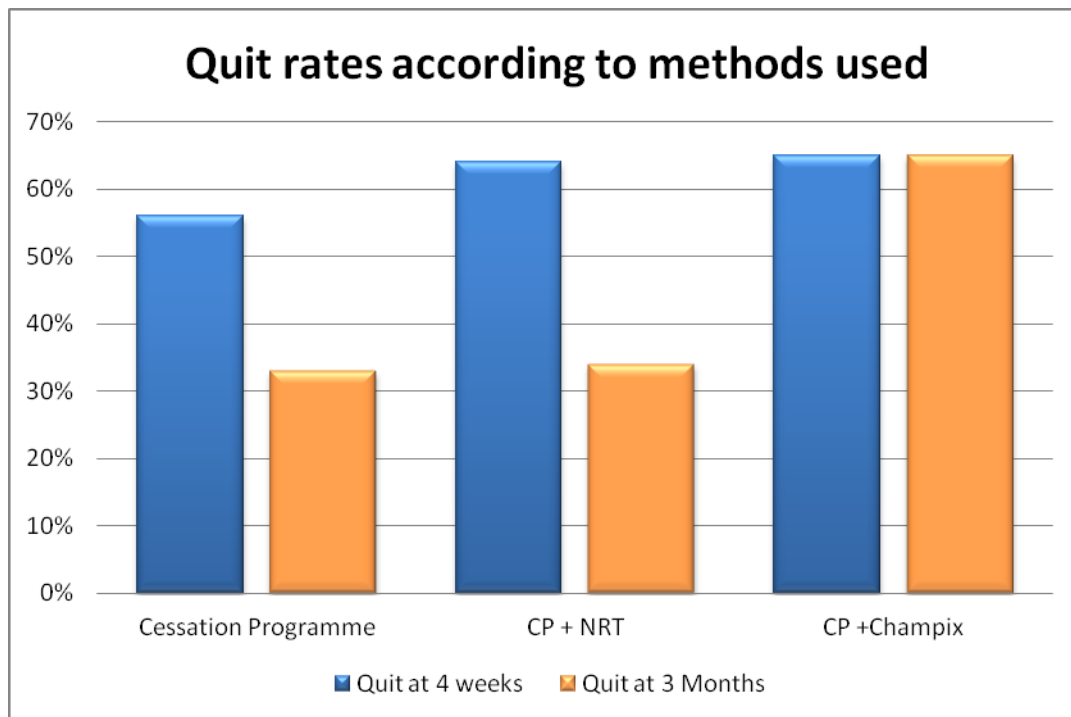


Table 5.18 Treatment methods used

Method Used	Number	%
Cessation programme	284	32%
CP+NRT	458	51%
CP & Combination therapy	11	1%
CP+Zyban	1	0%
CP+Champix	137	15%
Total	891	100%

The most often used method by this cohort was smoking cessation treatment programme accompanied by nicotine replacement therapy in 52% (469) of the patients recorded.

Graph 5.30 Quit rates according to methods used



$\chi^2 = 8.925^a (8)$, $P = .349$ at 4 weeks.

$\chi^2 = 8.055^a (8)$, $P = .428$ at 3 months.

Quit rates using cessation programme only and cessation programme plus NRT fall off by a significant 33% and 30% respectively whereas the quit rate of those treated with Champix and cessation programme remained at 65% at both 4 weeks and 3 months. The above data represents results of 891 of the total 1490 patients entered into the data base. The remaining 599 who failed to return and commence treatment were reported as a failed quit attempt in the overall quit rates reported in this thesis which was 37% at 4 weeks and 22% at 3 months. The quit date of those that had set a quit date and therefore commenced treatment, had a quit rate of 61% at 4 weeks and 35% at 3 months.

5.3.9 Quit rates according to number of previous quit attempts

Graph 5.31 Number of previous quit attempts by patients in the dataset

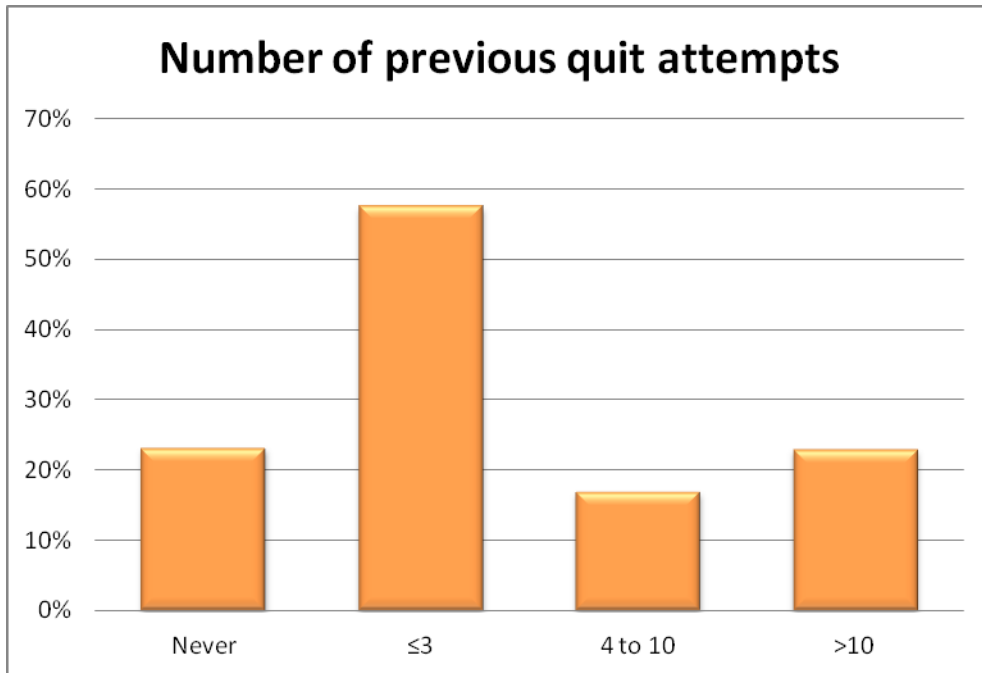
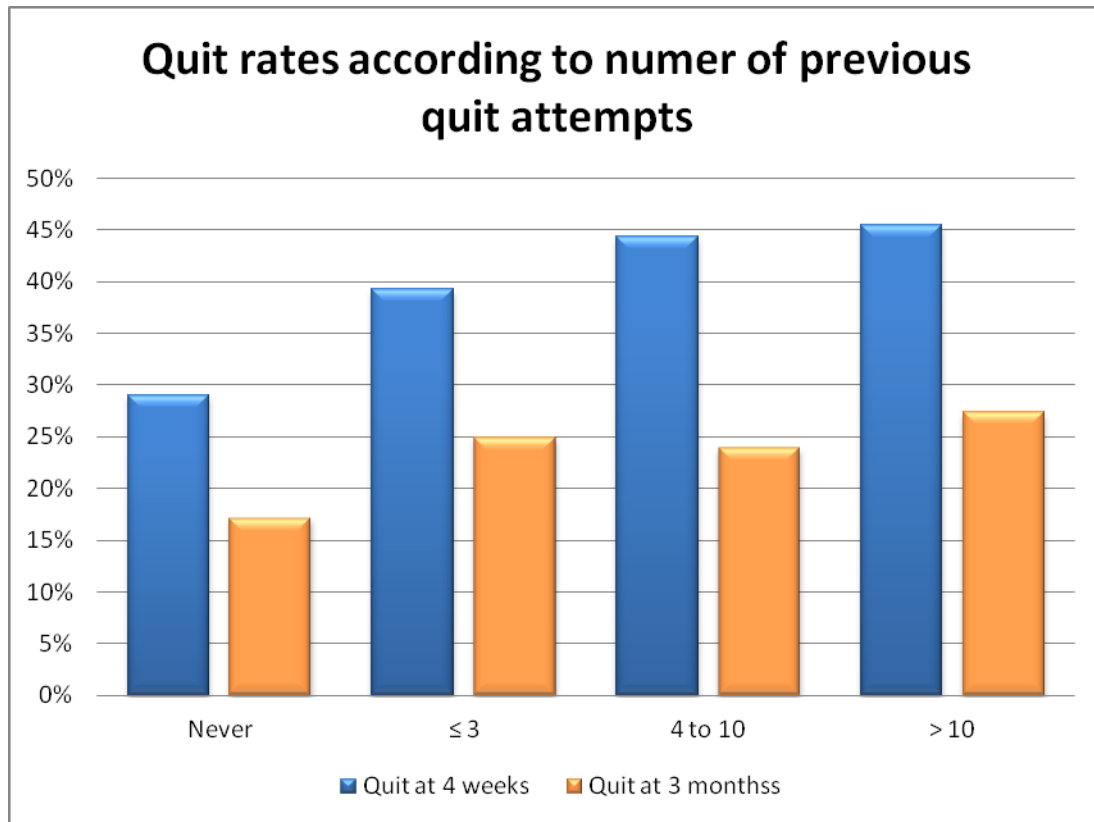


Table 5.19 Number of previous quit attempts.

Previous quit attempts	Frequency	%
Never	334	23.2
≤3	827	57.6
4 to 10	243	16.9
>10	33	2.3
Total	1437	100

The most commonly reported number of previous quit attempts was ≤3 at 57.6%(827)

Graph 5.32 Quit rates (%) by previous number of previous quit attempts



$\chi^2 = 17.834^a$ (6), $P < 0.05$ at 4 weeks.

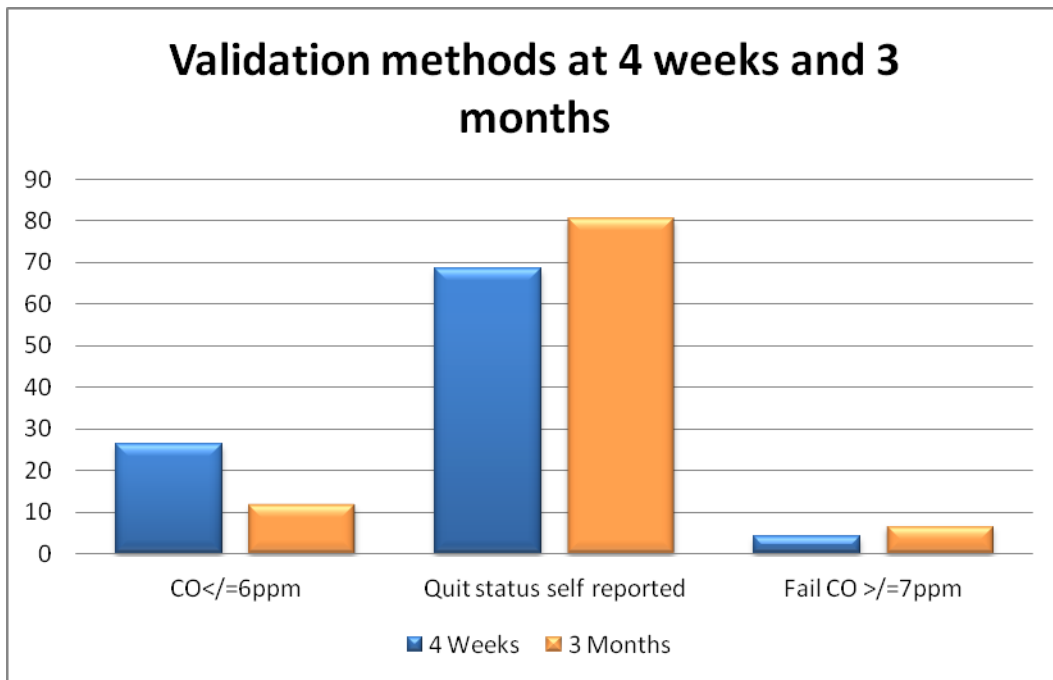
$\chi^2 = 9.755^a$ (6), $P = .135$ at 3 months.

When looking at the number of **previous quit attempts** the trend was for the more previous quit attempts the patients had the more likely they were to have a successful quit attempt at 4 weeks however this did not reach a statistically significant level at 3 months.

5.3.10 Reporting/validation of quit status

CO validation of quit status was missing on 867 patients in the dataset at 4 weeks and in 1092 patients at 3 months.

Graph 5.33 Reporting methods of quit status at 4 weeks and 3 months



Most validations of quit status are by self-reporting 68% (427) at 4 weeks and 80% (320) at 3 months.

5.3.11 Patient Status on referral

The distribution of where patients were seen and whether they were treated as an inpatient or an outpatient in the dataset are described below.

Graph 5.34 Patient status on referral

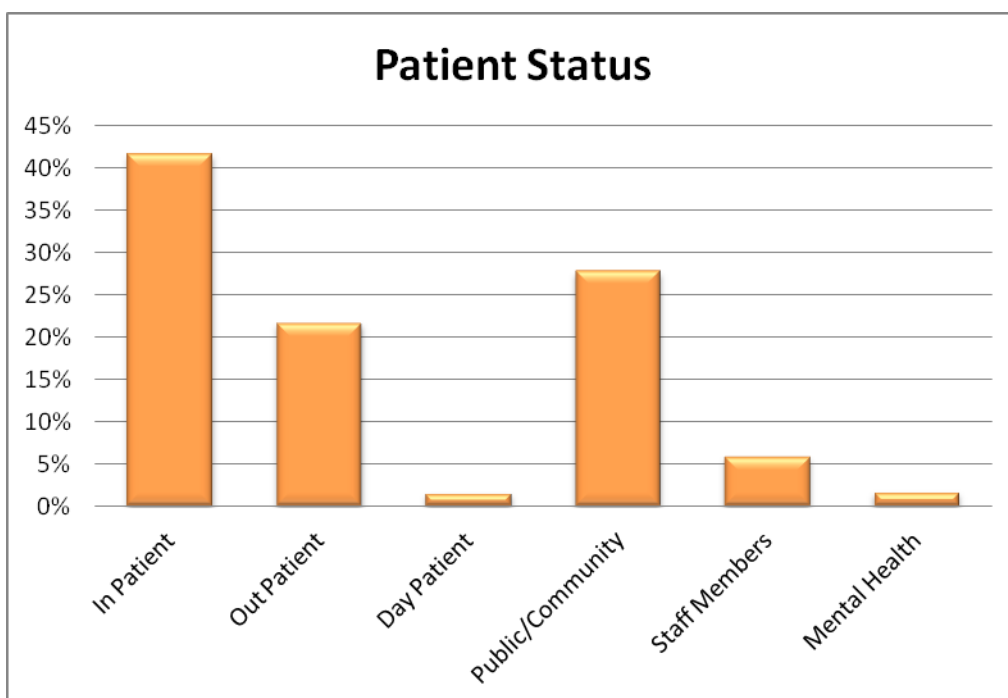
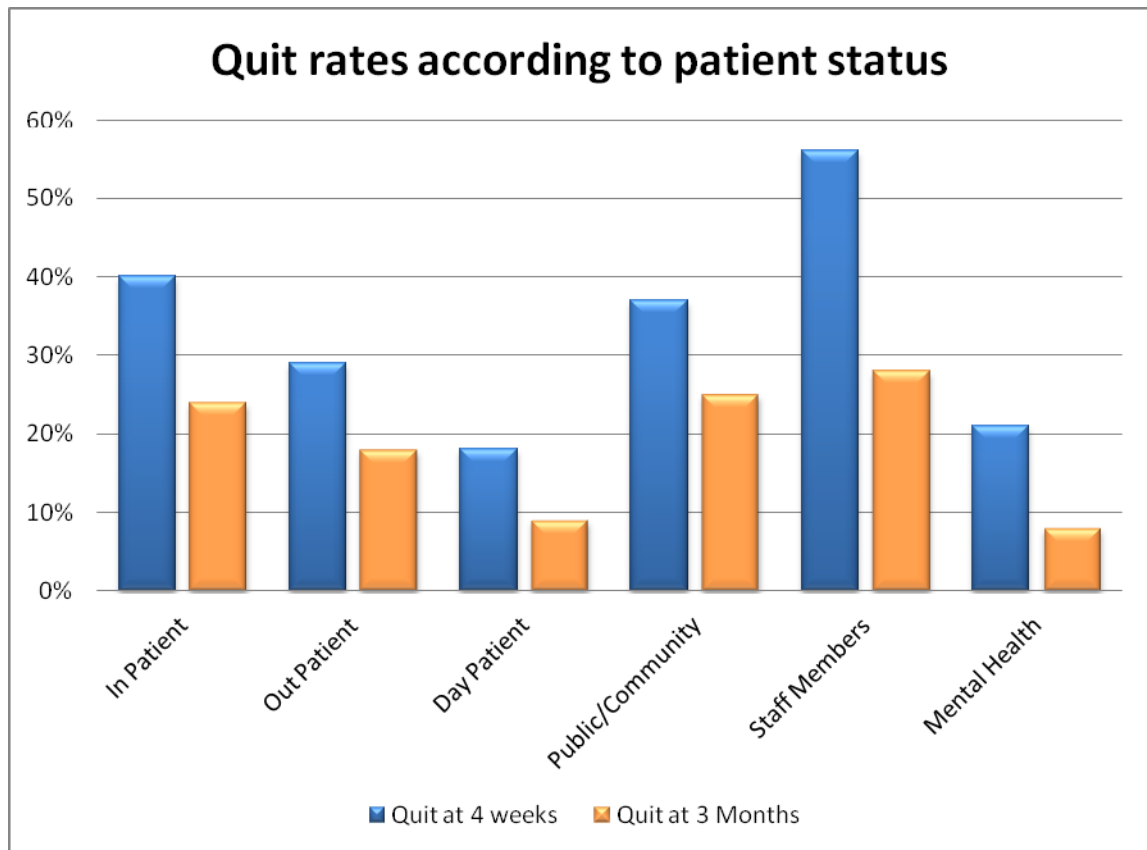


Table 5.20 Patient status

Patient Status	Frequency	%
In Patient	620	41.7
Out Patient	322	21.7
Day Patient	22	1.5
Public/Community	413	27.8
Staff Members	86	5.8
Mental Health	24	1.6
Total	1487	100

Graph 5.35 Patient status and their quitting rates at 4 weeks and 3 months



$\chi^2 = 33.212^a (10)$, $P < 0.05$ at 4 weeks.

$\chi^2 = 14.306^a (10)$, $P = .159$ at 3 months.

Where patients were at the time of being treated was seen to be statistically significant in terms of quit rates at 4 weeks but not at 3 months. In the case of inpatients the quit rate fell from 40% at 4 weeks to 24% at 3 months.

5.3.12 Referral source

Graph 5.36 Referral sources of patients in the dataset

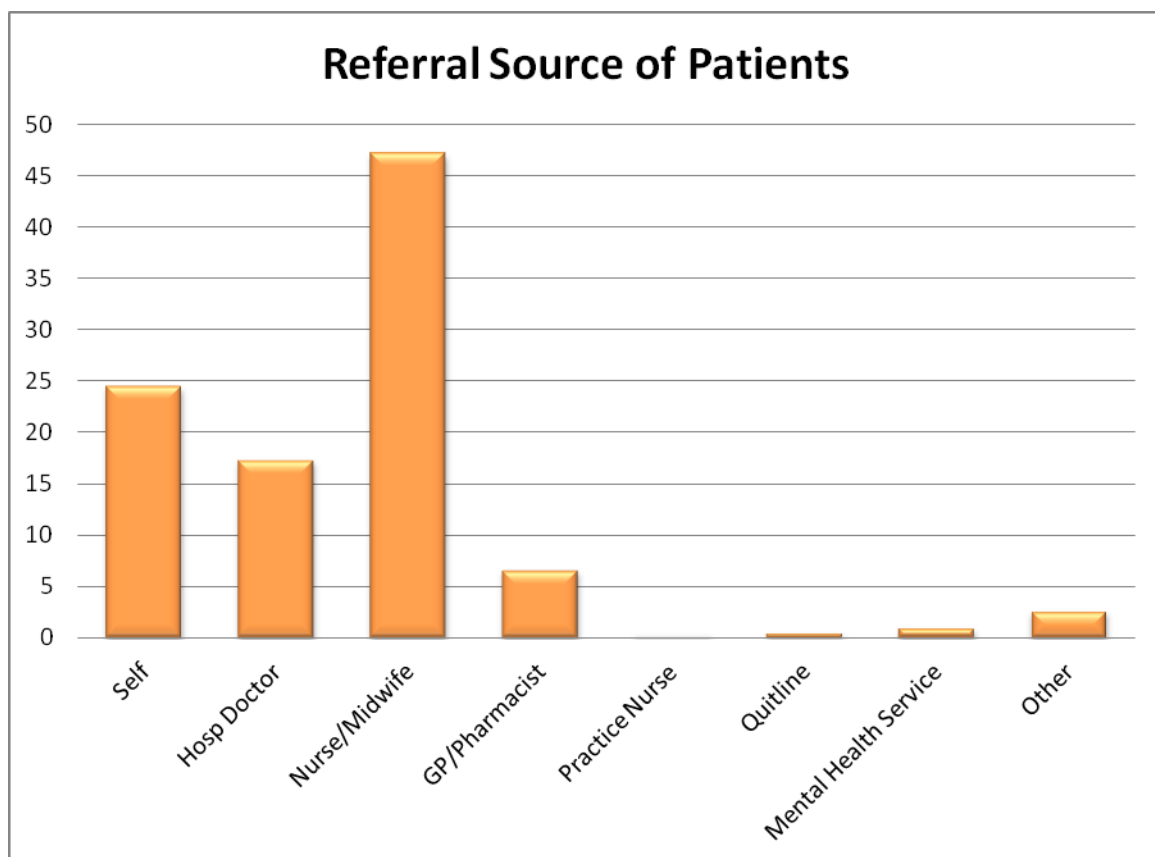
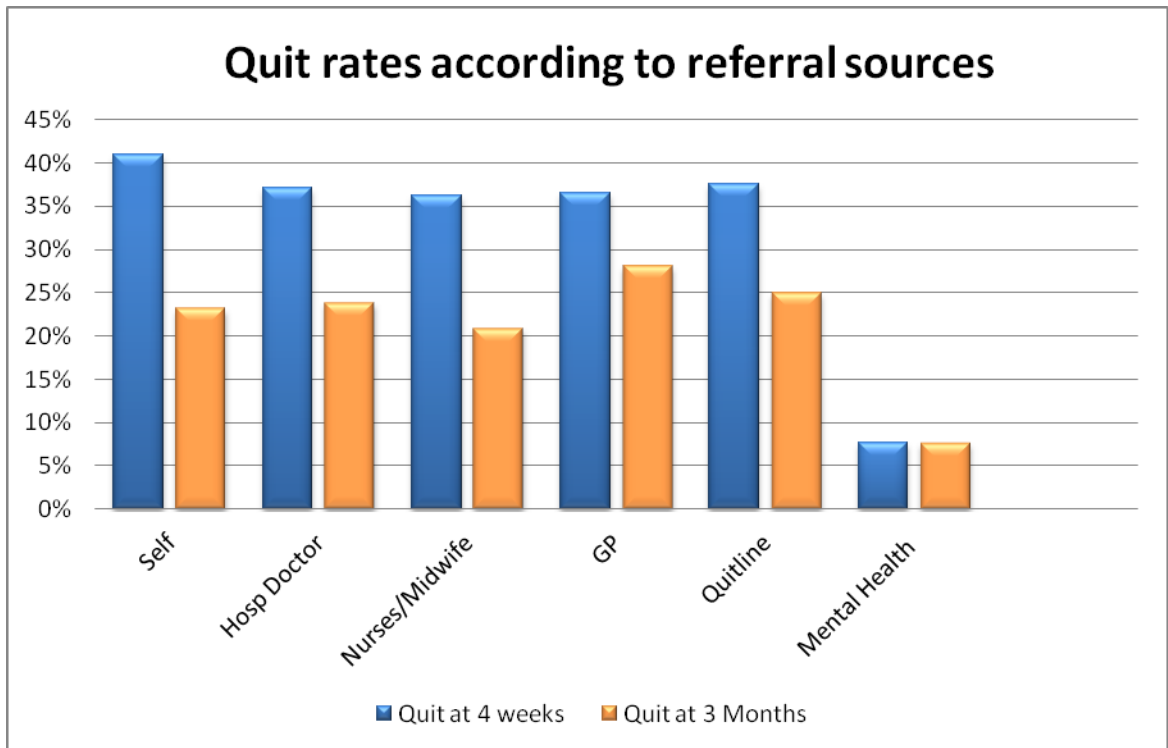


Table 5.21 **Referral source of patients**

Referred by	Frequency	%
Self	362	24.5
Hospital Doctor	256	17.3
Nurse/Midwife	697	47.2
GP/Pharmacist	97	6.6
Practice Nurse	4	0.3
Quitline	8	0.5
Mental Health Service	13	0.9
Other	39	2.6
Total	1476	100

Neither the national Quitline nor practice nurses seem to refer patients to specialist cessation services on a regular basis and given the sample size of 1476 GP's only referred 6.6% of patients.

Graph 5.37 Patient referral sources and their respective quit rates at 4 weeks and 3 months.



$\chi^2 = 14.531a$ (16), $P = .559$ at 4 weeks.

$\chi^2 = 14.359^a$ (16), $P = .572$ at 3 months.

Referral sources are varied and the success rate of the patients quit attempt is not shown to be more statistically successful in any category. Self-referrals do have the highest quit rate at over 40% at 4 weeks, however they do have the biggest drop in quit rates measured at 3 months.

5.3.13 Statistically associated covariates.

Certain covariates were found to be statistically associated with quit rates. The following data were collected to demonstrate whether they had any bearing on quit rates at 4 weeks and 3 months.

Table 5.22 Statistically associated covariates/factors influencing quit rates.

Factors:	4 weeks	3 months	Trend
Gender	Yes	Yes	
Age	Yes	Yes	
Setting a quit date	Yes	Yes	
Socio-economic Class	Yes	Yes	
Pregnancy	Yes	Yes	
Patient Status	Yes	No P = 0.159	
Number of previous quit attempts	Yes	No P = 0.135	Yes
Primary reason for quitting	Yes	No P = 0.115	
Fagerstrom Score	No P = 0.073	No P = 0.141	Yes
Average Number of Cigarettes Smoked daily	No P = 0.391	Yes	

Trends shown here were not statistically associated with quit rates however it shows a relationship with quit rates going in the one direction for example the higher the Fagerstrom score of patients the lower their quit rates and this may become statistically significant if numbers were greater and patients were followed for a longer period of time.

5.4 Patient satisfaction questionnaire:

All data were inputted on a master Excel spread sheet from all completed patient satisfaction questionnaires received from patients of each of the 41 Smoking Cessation service providers.

A total of 342 patients returned completed patient satisfaction questionnaires having availed of smoking cessation services during the 3 month pilot of the Data Collection Instrument (Patient treatment database).

Of the 342 patients, all were above 18 years of age. Almost half were 18-35 years of age and 172 were females.

5.4.1 Patient demographics

Graph 5.38 Patient satisfaction gender distribution: Male 44.5% (138) Female 55.5% (172)

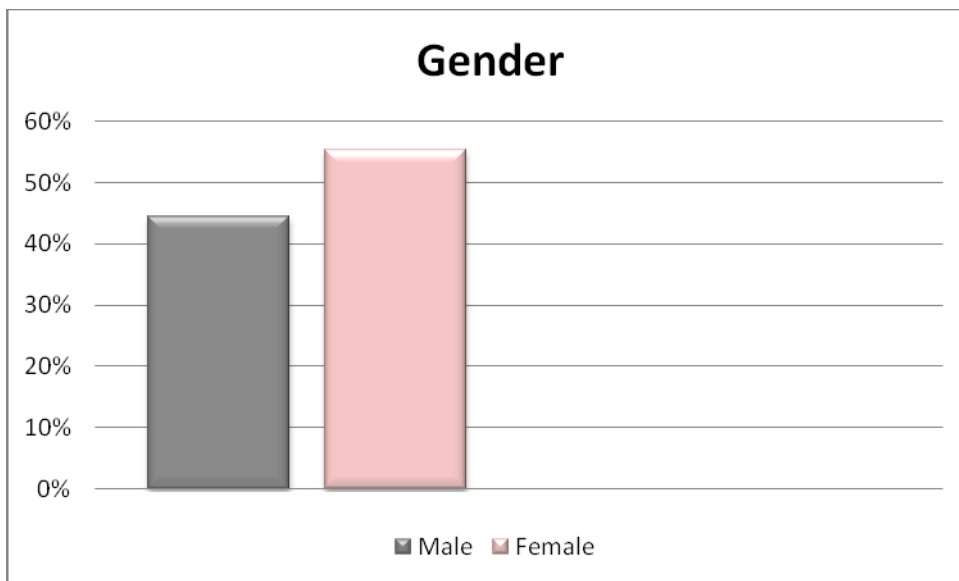


Table 5.23 **Numbers of Males and Females in the survey**

Gender	Frequency	%
Male	138	44.5
Female	172	55.5
Total	310	100

The data presented a reasonably even split between males and females (CSO 2011 census F 49.9% and M 50.6%). There was gender data missing on 9.4% of the completed questionnaires.

5.4.2 Patient preferences for day and time of service.

The majority preferred weekdays to weekends and also morning hours for seeking advice. Less than 7% of the patients had to wait for more than 4 weeks for an appointment with the smoking cessation service.

Graph 5.39 Patients appointment preference weekends or weekdays

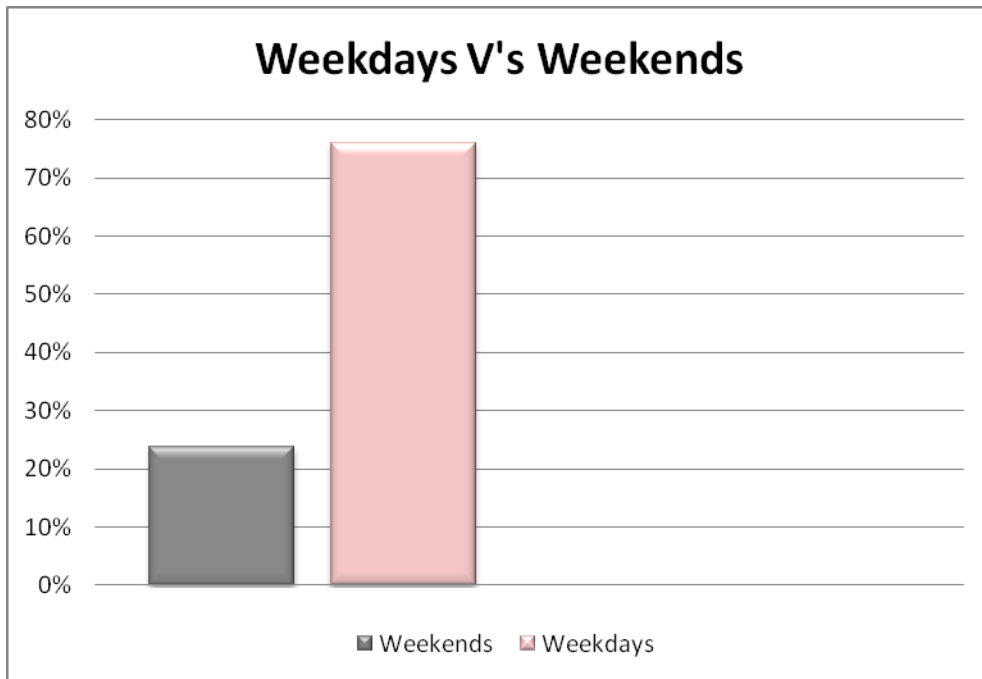


Table 5. 24 Weekday/Weekend preference

Preference	Frequency	%
Weekends	79	23.9
Weekdays	252	76.1
Total	331	100

Graph 5.40 Preference for time of day of service

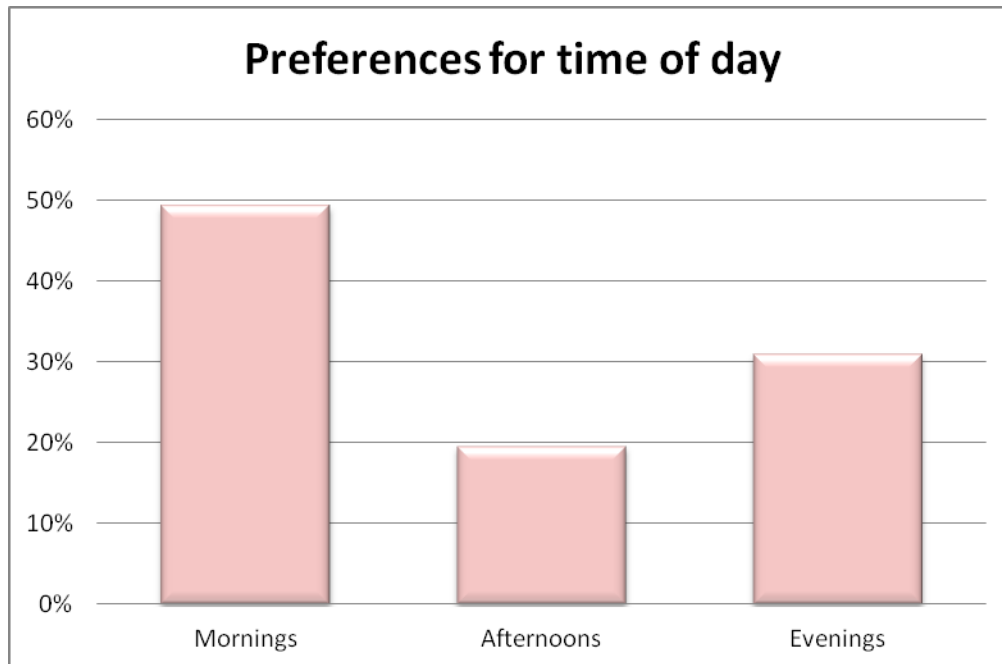


Table 5.25 Patients preferences of appointment times

Preference for Time	Frequency	%
Mornings	165	49.4
Afternoons	65	19.6
Evenings	103	31.0
Total	332	100.0

The majority of patients 49% (164) preferred their appointments to be held in the mornings while 31% (103) preferred evening clinics and the least popular time was afternoons which was preferred by only 19% (65) of patients.

5.4.3 Length of time awaiting appointment

Graph 5.41 **Waiting time for appointments**



Waiting time for appointments was divided up into 4 groups <1 week 1-2 weeks, 2-4 weeks and 'don't know' category to allow for those whose appointments were made on their behalf by others.

The results show that the waiting time for appointments was extremely short at less than 1 week for almost 44.6% (146) of patients while only 14.1%(46) were waiting from 2 to 4 weeks for an appointment.

5.4.4 Payment for prescriptions

Graph 5.42 Numbers reporting having to pay for prescriptions

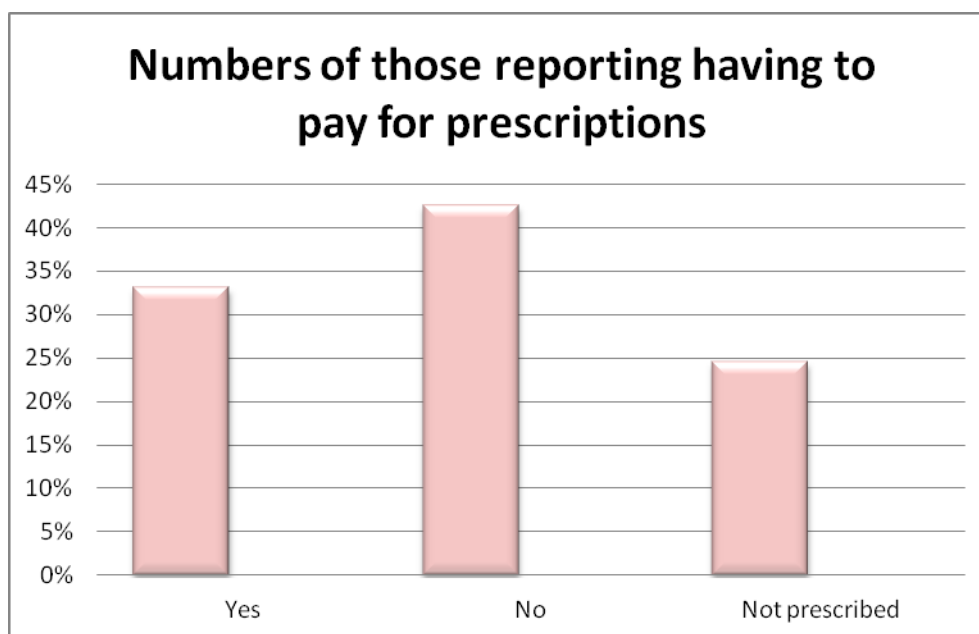


Table 5.26 Number of patients paying for prescriptions

Numbers having to pay for prescriptions	Number	%
Yes	101	33.0
No	130	42.5
Nothing prescribed	75	24.5
Total	306	100.0

Graph 5.43 If paying for prescriptions influenced participation in the treatment programme

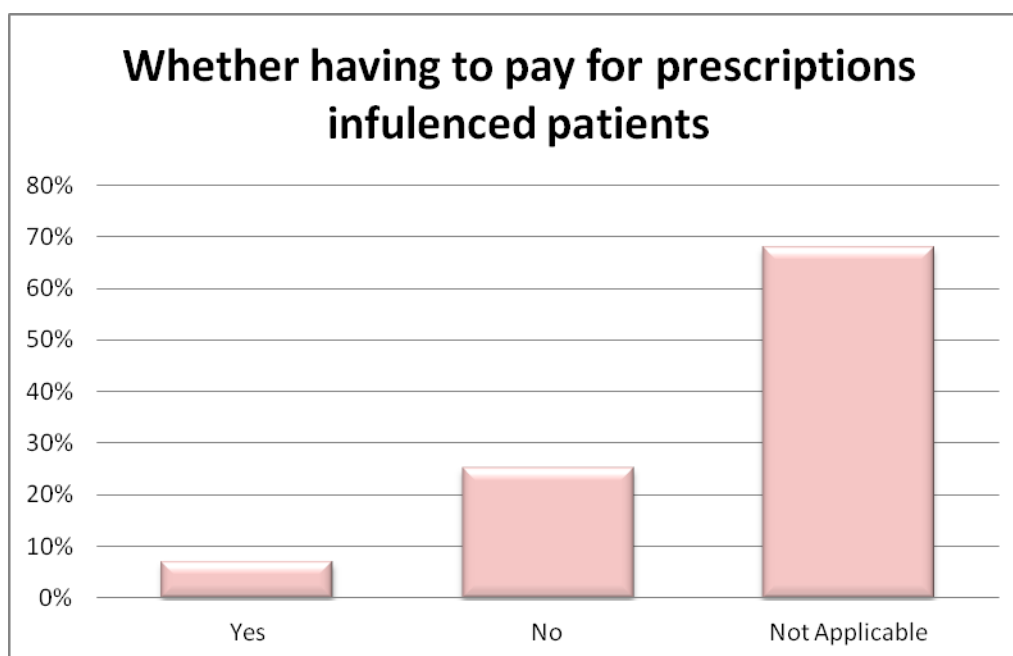


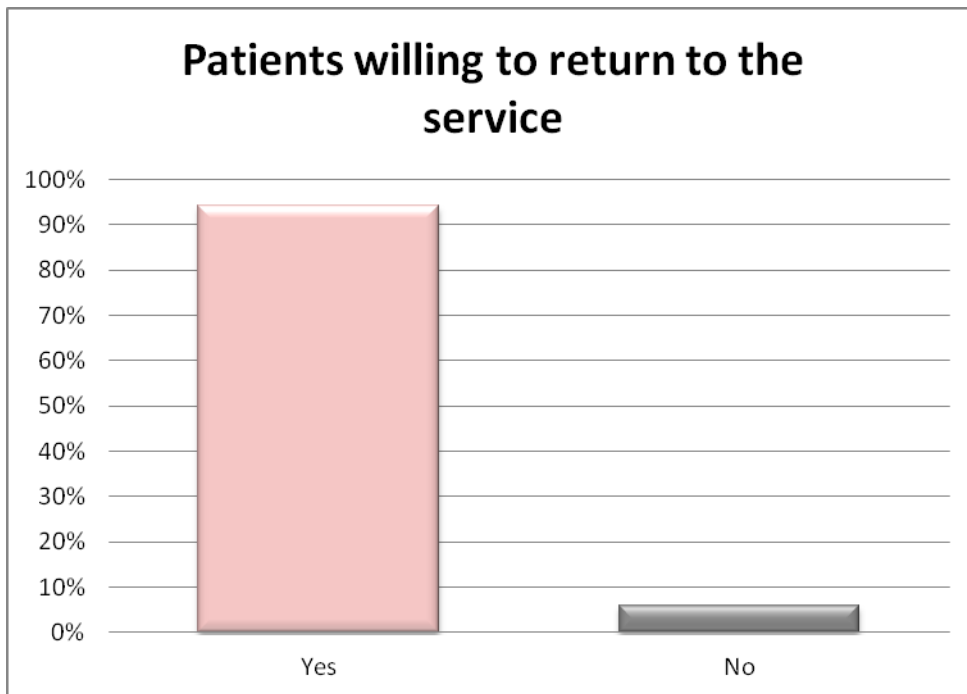
Table 5.27 Whether payment influenced treatment

Did payment influence treatment	Frequency	%
Yes	21	7
No	76	25
Not applicable	205	68
Total	302	100.0

When asked whether having to pay for prescriptions influenced their participation in the smoking cessation treatment programme, of those that responded, over 25% (76) said it did not, whereas only 7% (21) reported that it did.

5.4.5 Willingness to return to the service.

Graph 5.44 Patients willingness to return to the service



Over 94% (283) of the patients reported that they would be happy to return to the service again should they require it.

This is the most comprehensive and first independent evaluation of the smoking cessation services (SCS) in Ireland. EC funded projects such as PESCE and eSCCAN have looked at aspects of SCS in a number of other EU countries and the UK publishes regular reports on its services. It is clear from these projects and the EQUIPP report that there is no agreed ‘best’ approach but there are lessons to be learned from studying the different approaches. I will discuss the relevant aspects from the Census Questionnaire, Treatment database and Patient satisfaction questionnaire separately.

6.1 Census questionnaire

6.1.1 Cessation specialists

The Irish services are most like England and Northern Ireland but are much less well developed or funded.

It was established from the census that the majority of cessation specialists were nurses (71.2%) similar to Northern Ireland and England but very different from many EU countries such as Germany where psychiatrists and psychologists are the main cessation specialists, or Spain Greece and Denmark where respiratory physicians are most often associated with treatment of tobacco dependence. France and Belgium have special ‘tobaccologists’ who come from a variety of healthcare specialities (EQUIPP, 2011).

6.1.2 Training of specialist smoking cessation service providers

All the specialists had smoking cessation training and the majority (58%) had had training in the previous 2 years. It is clear from the survey that the SPs are very conscious of the need and importance of continuous further training and also their willingness to participate where 62% identified further training as a priority.

There is no agreed standard of training required or accreditation demanded for the practicing as a smoking cessation specialist in Ireland. None of the SPs had degree level qualification in SC. At present there is no formal accreditation in many EU countries but the ENSP is trying to get consensus across the EU. France, Belgium and the Netherlands have a registration process.

6.1.3 Service aspects

A noticeable aspect of the activities of the SPs was that very few of them were full-time SC practitioners with 43% giving less than 10 hrs. per week to the activity. Again this is not unusual in Europe but is not the norm in the UK. Most services were located in hospital facilities and most patients came from hospital services. 42.9% of the services were available to all population groups but some services limited their availability to their own hospital populations (in patient/outpatient and staff) 7.9 %.

Before this study there was no national database for collection of smoking cessation statistics. Information and statistics on SCS was collected, mostly manually, by individual practitioners and reported for administrative purposes to a health board manager. What we

found was that the data collected was not always adequate for monitoring the service but also that no systematic use was made of the data collected to assess the service. Also much of the data collected was not analysed or used for any discernible purpose. For example, data on pregnancy status (32.8%), age (39.1%), gender (40.6%), number of previous quit attempts (53.1%), smoking history (57.8%), Fagerstrom score (37.5%) and patient status (25%) were collected by SPs and but no further attention or use of the data was uncovered. Asking SPs to collect data and not to use it, or give the SPs feedback on their service, can only be seen as a poor incentive for them to continue to collect, or indeed expand on the data collected.

The adequacy of the resource allocated to smoking cessation is difficult to assess but using NICE guidelines where it is recommend that services should be available to treat some 5% of smokers per year; this is probably not being met in Ireland. It is also obvious that the distribution of services throughout the country is uneven even when allowance is made for distribution of smokers.

The difficulty of providing SC services in sparsely populated areas, as in most specialised healthcare services, is also evident.

The structure of the service offered also varied greatly. This was particularly noticeable in scheduling of services where there was a complete lack of uniformity in the periodicity of follow up of patients. Only the North Western region which represents 9.5% of service providers have a standardised follow-up regime consisting of a weekly review for the first 4 weeks, fortnightly up to 3 months and then monthly for up to 1 year. This is more than recommended by NICE but contrasts with other Irish services where it was found that

currently only 47.6% of respondents follow up patients 4 weeks post their quit date 40.0% of whom report using CO monitoring to validate quit status often or always.

NICE guidelines suggest:

- SC services should aim to treat at least 5.0% of the estimated population of people who smoke each year.
- That intensive support should be offered to smokers who would like to quit in weekly sessions for at least the first 4 weeks following a quit attempt.
- SC services should aim for a 35% 4-week success rate validated by CO monitoring, with success defined as not having smoked in the third and fourth weeks following the quit date.

This survey showed that almost a third of smoking cessation service providers did not have access to computers. This highlights the need for improvement in this area in both training of data capturing as well as financial input in developing services and implementing proper and uniform data collection systems throughout the country.

6.2 Treatment database

6.2.1 Quit rates.

While this study was not undertaken to study the outcomes of the services in terms of success rate in quitting, it is clear from the data collected that the results at one and three months are in line with some international outcomes but lower than NHS in UK (NICE, 2008). However more comprehensive studies of longer duration would be needed to confirm these findings.

6.2.2 Gender differences in quit rates

Gender results showed that across all age groups a higher number of men were successful in quitting smoking than women, and the older age groups were more likely to be successful at quitting than their younger counterparts. This is also in line with international experience. A study in 2003 found that women appear to have higher behavioural and lower nicotine dependence than men; therefore both nicotine and behavioural treatment should be tailored to women to increase their chances of abstinence (Bohadana et al., 2003).

6.2.3 Pregnancy:

Pregnant women (n=118) were compared with non-pregnant women. The quit rates of pregnant women at 4 weeks was 16.5% compared with 35.2% of non-pregnant women. The findings within pregnant women were surprising in that the quit rates achieved by them were disappointing. The expectation was that their motivation to quit would be high.

At 3 months the quit rate of pregnant women remained at 16.5% whereas their non-pregnant counterparts quit rates fell. It could perhaps be deduced from this that if a pregnant woman is successful at stopping she is more likely to stay quit longer. This would need further research in that the stage of pregnancy is not collected in this data set and so it could be that they only remained quit while pregnant. Nevertheless, it poses interesting questions and could indicate further worthwhile rationale in targeting women while pregnant, with a view to bringing down the overall smoking prevalence in women. It

would also be interesting to see whether this would last beyond the term of their pregnancy. Pregnant women in the UK tend to be dependant smokers often with limited resources (Lee et al., 2006) which could be a reason for their disappointing quit rates if this was also shown to be true in Ireland. Counselling from a smoking cessation specialist together with written support materials is effective in aiding the smoking cessation of pregnant women. Studies show that specialist support enables about one in 15 to stop smoking for the remainder of the pregnancy who would not otherwise have done so (West et al., 2000). The poor results may result from a paucity of services in Ireland for this population group.

6.2.4 CO validation of quit status:

The quit status of patients was validated by CO monitor reading done at 4 weeks on 188 patients, which means that 427 patients who reported being quit at 4 weeks did not have their quit status validated. The number of cessation officers who reported CO validation in the census was 40%. The number of services using CO validation in the database was 20 out of 39, which represents over 50% of those who participated. Perhaps being involved in completing a database on a national level will increase reporting and therefore give rise to more valid and realistic results.

6.4.5 Setting of quit date:

The importance of setting a quit date is underlined by the fact that the quit rates amongst this specific group at 4 weeks was 61% and 35% at 3 months whereas overall quit rates

were 37% and 22% respectively. Planning commitments and setting of a quit date has been shown to play an important role in smoking cessation. Successful quit attempts have been shown to be markedly higher amongst those with a set quit date. (Balmford et al., 2010).

6.4.7 Patient status

This was broken into several categories, such as out-patients, in-patients, staff members, community care etc., and it was statistically associated with quit rates at 4 weeks but not at 3 months. The result was highest for staff members and this could perhaps be explained by motivation from working within the health sector and proximity to the service.

6.4.8 Referral source

This was not shown to be a statistically significant predictor of quit rates. There were notably few referrals from the national Quitline or practice nurses to specialist cessation services. This should be encouraged as the chances of quitting are approximately doubled with group therapy compared to being given self-help materials without face-to face instruction and support (EQUIPP, 2011).

6.4.9 Number of previous quit attempts

The higher the number of previous quit attempts reported by patients was shown to be a predictor of quit rates at 4 weeks but not so at 3 months in line with recent international

literature (Jardin and Carpenter, 2012). Therefore when dealing with these patients' greater efforts should be made to prevent relapse, perhaps by longer and more frequent follow up.

6.4.10 Type of treatments

The data showed that patients who received counselling plus a combination of NRT were the most successful group, however those that received both counselling and Champix were more likely to be successful at 3 months, although the numbers in this particular group were very small and further data needs to be collected in this area. The least successful group were those who received counselling alone. The results with regard to types of treatment received, on quit rates was not statistically significant, probably because of sample size but shows a trend towards more support and pharmacotherapy being associated with higher quit rates. International results show that current pharmacological treatments are effective, and estimates are that the abstinence rate at 6 months among adults randomly assigned placebo was about 16% versus 19 to 26% across most pharmacotherapies, in contrast use of varenicline and combination NRT were associated with rates of 33% and 37% respectively (Fiore et al NEJM Sept 2011).

There are at present no published set of smoking cessation guidelines in Ireland. The National Tobacco Control Framework sets out the strategic direction for Tobacco Control for the next 5yrs from 2011. An annual implementation plan will be developed, best practice guidelines for the management of tobacco in mental health settings have been developed but these are not smoking cessation guidelines (EQUIPP). The HSE has developed a national standardised model for delivering training in Brief Intervention skills

for Smoking Cessation. This training programme is guided by the HSE Tobacco Control Framework Document 2010 and incorporates the WHO recommendations of the MPOWER model for tobacco control. The implementation of this programme is vital for the success of an expansion of cessation services both because it is known that brief intervention works in getting people to stop smoking but also health care staff trained in brief intervention are also more likely to refer to more successful comprehensive treatment services.

6.5 Patient satisfaction

This is the first study in Ireland to provide baseline information on patients' satisfaction on the currently available smoking cessation services in the four HSE areas in Ireland. Overwhelmingly more than 80% of patients were satisfied with the current service including training of staff, time and location of service and a similar number would also recommend these services to friends and family. This is a great tribute to the dedication and professionalism of the individual practitioners who provide the smoking cessation service.

Having data like this from across the country will enable us to better design and target services suitable for different population groups. More such surveys are needed to help with better design and delivery of the much needed service. It is important that the cessation service needs in Ireland are properly addressed, as a cost-effective comprehensive tobacco dependence treatment program can accelerate further declines in smoking rates (Currie et al., 2012).

CHAPTER 7 STUDY LIMITATIONS AND CONCLUSIONS

7.1 Limitations

7.1.1 Census questionnaire:

This is a novel questionnaire, purpose built and therefore may not capture all important data but was piloted internally and among a sample of the target population of service providers. The lack of access to computers of some of the respondents was surprising and added to delay and incompleteness.

7.1.2 Treatment database

Only 49 service providers out of a total of 63 identified in the initial database of service providers agreed to pilot the treatment database. Others were not in a position to participate in the project and of the 49 that agreed 39 datasets were suitable for analysis.

Data was collected only over a 3 month period and so there were are no seasonal aspects of cessation rates been shown.

Although exhaled CO monitoring was recommended the majority of smokers self-reported their smoking status and this gives rise to uncertainty about the validity of quit rates.

More than 95% of the population studied was Caucasian in origin and therefore ethnicity as a contributor to disparities in smoking cessation cannot be applied.

Reporting of Number of Cigarettes smoked was not always accurate, in that some cessation providers recorded 0 as their patients had quit that day, or within a week or so of attending

the service and so when analysing the level of smoking as a predictor of quitting this may have caused anomalies. In future, clearer guidelines should be given to service providers on completing the Fagerstrom score and number of cigarettes smoked, so that the patients' average numbers of cigarettes smoked when they were smoking is what should be recorded. While the number of cigarettes smoked was found to be a statistically significant predictor at 3 months, its significance may be even greater if recorded correctly and not under-reported by service providers as was the case in this project. As well as a predictor of quit rates it could also help as a determinant of the treatment offered to the patients.

7.1.3 Patient satisfaction survey:

The number of patients who returned completed survey questionnaires was relatively small at 342 out of 1490 patients who were entered into the treatment programme, during the 3 month pilot of the treatment database.

This may be because of time constraints of the service providers, who may not have stressed its importance, their lack of administrative support, as well as the lack of motivation of patients to complete and return the forms. Although it was explained in great length the anonymity of patients and the fact that completed forms would not be returned to their service provider they still may have had doubts or reservations about expressing their opinions to colleagues of their careers. Nevertheless the insight gained is worthwhile.

7.2 Conclusions

The conclusions of this study are as follows:

7.2.1 Database of cessation service providers

No up to date comprehensive database of service providers and their contact details for circulation to health professionals to aid referrals existed.

7.2.2 Census of smoking cessation services

Only 1 smoking cessation service clinic was identified in a psychiatric setting.

No standardised procedure for follow up of patients is being practiced.

71% of Cessation SPs were from nursing background.

Poor data collection, almost 1/3rd (32%) of SPs do not have access to a computer.

Poor use is being made of the data collected.

No standardised training is being given to cessation service providers, 61% identified further training as a priority.

Patients who attended the services are very happy with them and 94% said that they would be willing to return.

7.2.3 Smoking cessation treatment database

This study has demonstrated that quit rates achieved by the present services are 37% at 4 weeks and 22.4% at 3 months. However amongst pregnant women the quit rates were low at 16%. It demonstrated consistently poor outcomes in known vulnerable subgroups of smokers such as youth, hard core smokers, pregnant women and those from lower SE groups. It also showed that referrals from sources outside of the cessation services and hospitals were low, as is the case in the UK, where GPs are the main referral source but still their referrals are low in number (McRobbie et al., 2008).

Men had a higher quit rate than women in this study, in keeping with the results of a meta-analysis of NHS cessation services in the UK in 2010 (Bauld et al., 2010).

7.3.4 Patient satisfaction

Having received and analysed responses from 342 patients who used the services, although a small number, it gives us better insight into their needs, likes and dislikes. It helps us to dispel ideas that perhaps patients would not be prepared to pay for their prescriptions in order to part take in a tobacco dependence treatment programme. It also demonstrated quite clearly, that the time of day preferred by patients was mornings, weekdays and not weekends or afternoons. After looking at the 33% who did have to pay for prescriptions they overwhelmingly (78.1%) reported that it did not interfere with their participation in the treatment programme.

Overall therefore, this study shows that there are Smoking Cessation Services available throughout the country, that all service providers have basic training and that there is widespread patient satisfaction with the services on offer. The results at 3 months are satisfactory but below expectations in the UK (NICE, 2008). It also shows the need for monitoring and recording of smoking cessation activity, in order to properly evaluate fully its effectiveness and provide the evidence base to improve and further develop treatment programmes of this sinister disease.

In order to address health inequalities smoking cessation services need to be available to all members of society both in rural and urban areas. Particular attention should be given to maternity and psychiatric treatment centres and areas with high levels of low socio-economic classes. This study also shows the lack of uniformity in treatment services, training of SPs and monitoring of the service outcomes and highlights the need for significant changes.

Although there is no agreed standard of care in Europe it is clear that the training of practitioners, the availability of services, the monitoring of activity and outcomes leaves much to be desired.

CHAPTER 8 RECOMMENDATIONS

Based on the conclusions from this study the following recommendations emerge:

8.1 Training

1. That the training of smoking cessation practitioners be formalised with a requirement to achieve at least diploma level and higher level training at degree level needed for advancement.
2. That an accreditation system is introduced and continuous professional development be formalised and regulated.
3. Training for health professionals is needed to encourage them to refer smokers to specialist clinics.

8.2 Services

1. The elements of a standardised service should be agreed between relevant stakeholders including service providers, managers, smokers and the funding agency.
2. That guidelines for best practice are developed and introduced and an electronic database be established at national level with routine monitoring of activity and outcomes.
3. There should be more frequent interaction with representatives of identified groups with high prevalence or special problems such as mental health groups, unemployed,

maternity services, poverty groups and youth organisations. Services should be specifically targeted towards these vulnerable groups and those in lower SE categories who have limited resources and access to services.

4. That a standardised service be available to all smokers presenting for treatment at any cessation clinic in the country.
5. That there be increased availability and access to web based cessation interventions.

8.3 Monitoring/Surveillance

1. That an up to date database of available services be maintained.
2. That the database of services be publicised to facilitate access and referrals.
3. That data collected be analysed and reported on, to provide the evidence base to help improve outcomes for the smokers wishing to quit in Ireland.
4. That regular assessment of treatment outcomes be carried out and compared to international standards with recommendations for improvement where necessary.
5. There is need to monitor the outcomes in both quit line and web based interventions.

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Appendices:

1. Census Questionnaire
2. Sample of Treatment Database
3. Guidance Notes on the Data Collection Instrument/ Database
4. Patient Satisfaction Questionnaire
5. Ethics approval Letter

Appendix 1

Census Questionnaire



RIFTFS, Irish HPH Network and IPHI

Smoking Cessation Services in Ireland

Questionnaire

This questionnaire should be completed by the person responsible for day-to-day management and/or running of the smoking cessation service.

Questions will cover the following areas:

- Qualifications of staff providing the program
- Service structure
- Participants attending the program
- Location of the service
- Patient record systems

All information collected in this questionnaire is for the purpose of data compilation and will be treated in a confidential manner and used only for its intended purpose.

Audit - Smoking Cessation Services

Smoking Cessation Service Staff Characteristics

1. Are you

- a) A smoking cessation service provider? ☐
- b) A smoking cessation service manager? ☐

2. If you are a **SCS manager**, please list the providers' names in your region:

3. Please select your job title from the list below:

- ☐ Smoking Cessation Officer ☐ Tobacco Manager
- ☐ Health Promotion Officer ☐ Other (please specify):

4. How long have you been in your current job? (please select one)

- ☐ Less than 6 months ☐ 6 to 24 months
- ☐ 25 to 36 months ☐ 37 to 48 months ☐ More than 48 months

5. Please select your professional background:

- ☐ Nursing ☐ Health Promotion ☐ Other (please specify):

6. Have you attended specific training on smoking cessation? ☐ Yes ☐ No

7. If yes, please indicate the type and duration of training below:

Brief Intervention training

1 day ☐ 2 days ☐ 4 days ☐ 6 days ☐ more than 6 days ☐

Who offered this training?

Intensive Smoking Cessation training

1 day ☐ 2 days ☐ 4 days ☐ 6 days ☐ more than 6 days ☐

Who offered this training?

Train the trainers training

1 day ☐ 2 days ☐ 4 days ☐ 6 days ☐ more than 6 days ☐

Who offered this training?

8. Date of most recent training attended:

9. Do you have any specific smoking cessation training needs? ☐ Yes ☐ No

10. If yes, please describe below:

If you are a **Smoking Cessation Service Manager**, you are finished completing this questionnaire. Please ensure that the service providers in your region complete this questionnaire in its entirety. Thank you for your assistance.

If you are a **Smoking Cessation Service Provider**, please continue.

Smoking Cessation Service (SCS) Structure

11. To whom is the SCS available? (Please tick all that apply)

- ☐ In-Patients ☐ Out-Patients ☐ Staff ☐ Community
- ☐ All of the above

12. From which of the following do you receive referrals: (Please tick all that apply)

- ☐ Primary care staff (GPs, practice nurses)
- ☐ Pharmacists ☐ Dental Services
- ☐ Public health nurses ☐ Hospital midwives
- ☐ Hospital consultants ☐ Self-referral
- ☐ Other (please describe):

13. Which of the following smoking cessation services do you provide? (Please tick all that apply)

For:	Patients	Staff	Community
Individual advice / counselling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group advice / counselling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Telephone advice / counselling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Info on Nicotine Replacement Therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Info on Zyban	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Info on Champix	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify below)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. If you deliver **individual** advice or counselling,

How long do individual sessions usually last? Minutes

On what basis do you *usually* provide individual advice or counselling?

- ☐ Monthly ☐ Fortnightly ☐ Weekly ☐ Twice per week
- ☐ Once only ☐ Other (please specify)

15. If you deliver **group** advice or counseling,

How long do group sessions *usually* last? Minutes

How many sessions normally constitute complete course of treatment?

Over what period are these sessions provided?Weeks

16. If you deliver **telephone** advice or counseling,

How long do telephone sessions *usually* last? Minutes

On what basis do you *usually* provide telephone advice or counseling?

- ☐ Monthly ☐ Fortnightly ☐ Weekly
- ☐ Twice per week ☐ Once only ☐ Other (please specify).....

17. Do you follow up on patients once they have received smoking cessation support?

- ☐ No, none of the patients receive follow up (skip to question 19)
- ☐ Yes, all patients receive follow up
- ☐ Yes, but only some patients receive follow up (please describe which Patients receive follow up in the space below)

18. At what period do you follow up once patients have received smoking cessation support? (Please tick all that apply)

- ☐ 2 weeks ☐ 1 month ☐ 3 months ☐ 6 months ☐ 1 year
- ☐ Other (please specify)

19. Do you verify self-reported successful quit attempts by CO test?

- ☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always

20. How many patients attended your smoking cessation service in 2006?

21. Please indicate the number of patients attending your service during each of the following periods:

	Jan – Mar	Apr – Jun	Jul – Sep	Oct - Dec
1 – 50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51 – 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
101 – 150	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
151 – 200	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
201 – 250	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
251 – 300	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
> 300	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exact number

(if available)

23. How many hours per week was the smoking cessation service provided in 2006?.....

24. How many weeks per year was this smoking cessation service provided in 2006?.....

25. Was the smoking cessation service interrupted at any time during 2006?

☐ Yes ☐ No

26. If yes, why and for how long was this service interrupted?.....

.....

27. Please tick any of the following groups that you specifically target with your smoking cessation services:

- | | |
|--|--|
| <input type="checkbox"/> Homeless | <input type="checkbox"/> People who are housebound |
| <input type="checkbox"/> Pregnant women | <input type="checkbox"/> Ethnic minorities |
| <input type="checkbox"/> People with disabilities | <input type="checkbox"/> Young people |
| <input type="checkbox"/> People with smoking related illnesses | <input type="checkbox"/> Economically disadvantaged |
| <input type="checkbox"/> Hospital in-patients | <input type="checkbox"/> People with mental illness |
| <input type="checkbox"/> Gay and lesbian community | <input type="checkbox"/> Others (please specify) |

28. Please use the box below to tell us specifically how your smoking cessation service is targeting the groups selected above: (max 200 words).

29. To which geographical areas do you provide smoking cessation services? (please tick all that apply)

- | | | | |
|----------------------------------|------------------------------------|-----------------------------------|---------------------------------|
| <input type="checkbox"/> Dublin | <input type="checkbox"/> Longford | <input type="checkbox"/> Wicklow | <input type="checkbox"/> Offaly |
| <input type="checkbox"/> Wexford | <input type="checkbox"/> Westmeath | <input type="checkbox"/> Carlow | <input type="checkbox"/> Laois |
| <input type="checkbox"/> Kildare | <input type="checkbox"/> Waterford | <input type="checkbox"/> Meath | <input type="checkbox"/> Kerry |
| <input type="checkbox"/> Louth | <input type="checkbox"/> Tipperary | <input type="checkbox"/> Monaghan | <input type="checkbox"/> Galway |

- | | | | |
|----------------------------------|------------------------------------|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> Cavan | <input type="checkbox"/> Roscommon | <input type="checkbox"/> Kilkenny | <input type="checkbox"/> Limerick |
| <input type="checkbox"/> Cork | <input type="checkbox"/> Sligo | <input type="checkbox"/> Clare | <input type="checkbox"/> Mayo |
| <input type="checkbox"/> Leitrim | <input type="checkbox"/> Donegal | | |

31. Please indicate all the venues used to provide your SCS and how much time is spent providing services in each venue per week.

- | | Time spent/week |
|--|------------------------|
| <input type="checkbox"/> GP surgeries | _____ mins |
| <input type="checkbox"/> Other primary care centre | _____ mins |
| <input type="checkbox"/> Maternity hospital | _____ mins |
| <input type="checkbox"/> General hospital | _____ mins |
| <input type="checkbox"/> Psychiatric hospital | _____ mins |
| <input type="checkbox"/> Pharmacies | _____ mins |
| <input type="checkbox"/> Community centres | _____ mins |
| <input type="checkbox"/> Health centres | _____ mins |
| <input type="checkbox"/> Care of the elderly setting | _____ mins |
| <input type="checkbox"/> Other | _____ mins |

(please specify)

Smoking Cessation Service Information Systems

32. Is the system you use to keep patient records for the smoking cessation service users:

- | | |
|--|---|
| <input type="checkbox"/> Computer based | <input type="checkbox"/> Paper based |
| <input type="checkbox"/> Do not currently keep patient records | <input type="checkbox"/> Other (Please specify) |

33. Please tick all the fields recorded in your patient record system:

- | | |
|---|--|
| <input type="checkbox"/> Name | <input type="checkbox"/> Address |
| <input type="checkbox"/> Gender | <input type="checkbox"/> Age |
| <input type="checkbox"/> Referral source | <input type="checkbox"/> Pregnancy |
| <input type="checkbox"/> Smoking related illnesses | <input type="checkbox"/> Other medical conditions |
| <input type="checkbox"/> Smoking history (length of time smoking) | <input type="checkbox"/> Number of previous quit attempts |
| <input type="checkbox"/> Cessation aids previously used | <input type="checkbox"/> Cessation aids currently being used |
| <input type="checkbox"/> Smoking frequency | <input type="checkbox"/> Stage of behaviour change |
| <input type="checkbox"/> Print Resources provided | <input type="checkbox"/> Medical card status |
| <input type="checkbox"/> Type of intervention provided | <input type="checkbox"/> Outcome at end of program |
| <input type="checkbox"/> Follow up and status at 1 month | <input type="checkbox"/> Follow up and status at 3 months |
| <input type="checkbox"/> Follow up and status at 6 months | <input type="checkbox"/> Others (please specify) |

34. If you have a separate system to collect data for analysis, is this system:

- | | | | |
|--|---|------------------------------------|--------------------------------------|
| <input type="checkbox"/> Computer based → | <input type="checkbox"/> MS excel | <input type="checkbox"/> MS access | <input type="checkbox"/> Other |
| <input type="checkbox"/> Paper based | <input type="checkbox"/> Don't currently have a system to collect data for analysis | | |
| <input type="checkbox"/> Other (Please specify)..... | | | |

35. Please tick all fields recorded in this system:

- | | |
|--|---|
| <input type="checkbox"/> Patient demographics (name, address, gender, age etc) | |
| <input type="checkbox"/> Referral source | <input type="checkbox"/> Pregnancy |
| <input type="checkbox"/> Smoking related illnesses | <input type="checkbox"/> Other medical conditions |
| <input type="checkbox"/> Smoking history (length of time smoking) | <input type="checkbox"/> Number of previous quit attempts |
| <input type="checkbox"/> Cessation aids previously used | <input type="checkbox"/> Cessation aids currently used |

- | | |
|---|---|
| <input type="checkbox"/> Smoking frequency | <input type="checkbox"/> Stage of behaviour change |
| <input type="checkbox"/> Print Resources provided | <input type="checkbox"/> Medical card status |
| <input type="checkbox"/> Type of intervention provided | <input type="checkbox"/> Outcome at end of program |
| <input type="checkbox"/> Follow up and status at 1 month | <input type="checkbox"/> Follow up and status at 3 months |
| <input type="checkbox"/> Follow up and status at 6 months | <input type="checkbox"/> Others (please specify) |

Please use the box below to add any comments that you feel are relevant to this study: (max 200 word).

On behalf of RIFTFS, the Irish HPH Network, and the IPHI

Thank you for taking the time to complete this questionnaire.

Please return complete questionnaires by (DATE) to:

RIFTFS

The Digital Depot

Thomas Street

Dublin 8

skeogan@tri.ie

Appendix 2

Extract from treatment database

	A	C	D	E	F	G	H	I	J	K	L
102	Database Ref	Date of initial visit	Lung Age	Initial CO Reading	Age	Gender	Ethnic Group	Underlying Medical Condition	Psychiatric Illness	Cough	Occupation
103	KC001	16.12.11	57	8	43	M	Western Eur	7.None	Bipolar	No	2. Managerial & Technical
104	KC002	10.2.12	30	36	33	F	Western	1.COPD 2.Asthma 3.Ischaemic Heart Disease 4.Diabetis 5.Other 6.More than one of the above 7.None	None	Yes	2. Managerial & Technical
105	KC003	10.2.12	22	1	37	F	Western Eur	7.None	Schizophrenia	No	2. Managerial & Technical
106	KC004	10.2.12	108	13	76	F	Western Eur	1.COPD	2.Bipolar	Yes	6. Unskilled

Appendix 3

Guidance notes on the data collection instrument/ treatment database.

This data set captures the essential information needed for the monitoring of smoking cessation services for this TFRI/HPH/IPHI/HSE study on services in Ireland. Full, accurate and timely completion of the data set in respect of each patient is a firm condition of participation in this study.

Patient's name, address, and telephone number will not be collected as part of this study. These details should be kept as part of service records in each region/centre.

Please note that all fields in the data collection tool must be completed as a blank field will be analysed as missing data rather than 0 or a Negative answer
e.g. Field: "Number of roll up cigarettes" should read 0 if they do not smoke them.

PATIENT CONSENT

Verbal consent should always be requested from patients for the use of data collected for monitoring purposes. Permission should be sought for contacts made with patients at follow up points such as 4 weeks, 3 months, etc. For the duration of this study, patients should be informed that if they set a quit date, they will be reviewed at 4 weeks, and that CO monitoring will form part of this review/follow-up, unless they object to having a CO test, or if the follow-up is undertaken via a telephone call. Patients should be informed that if they are still quit at 4 weeks, they will be offered a review at 3 months, which will also include CO monitoring if they are still quit.

Should a patient request that they would like no follow-up contacts, local records will need to be clearly noted so that the patient is not contacted at 4 weeks or 3 months.

I.D. CODES/NUMBERS.

- **Local Patient Identifier** is the very first column and can be used to store a local patient number or a name, in order to match a patient's details with those records kept locally. This column does not have to be used and details from this column will not be part of the data analysed. This column will need to be deleted before the study data are sent to TFRI for analysis.

Service Providers and patients will be allocated ID codes for this study.

- **Service Provider ID** codes will be unique to each individual provider, and will be allocated on a geographical basis, thus enabling the 'mapping' of services.
- **Patient ID numbers** will be numeric codes, starting with 01, and hence may differ from ID numbers/codes that are used locally.

TREATMENT DATE

This is also referred to as Date of Assessment/Date of Registration/ Date first seen, depending on the cessation service centre. It is the date on which a patient first meets the service provider. If the cessation support is provided by telephone, it would be the date on which the first support phone call takes place between patient and adviser.

DEMOGRAPHIC DATA

Date of Birth To be denoted as DD/MM/YYYY

Gender Male/Female

Ethnic Groups

Western Eur Eastern Eur

Black African Black Caribbean

Black Other Irish Traveller

Roman Gypsy Oriental

Middle Eastern Indian Subcontinent

Other

Occupation *(Based on CSO Social Class Categorisation)*

A detailed listing of the occupations that fall under each category are provided separately.

However, here is a quick summary of some occupations under each heading:

1 Professional workers. *E.g. doctors, pharmacists, architects, dentists, engineers (civil/electronic/software/mining/mechanical), lecturers in third level education, judges, solicitors, clergy, psychologists, farm owners/managers (200+ acres).*

2 Managerial and Technical. *E.g. Managers of banks, hotels, shops, pubs; marketing managers; allied health professionals; nurses/ midwives; primary and secondary level teachers; farm managers/owners (100-199 acres); senior police/prison officers.*

3 Non- manual. *E.g. Police officers & soldiers (sergeant and below); administrative officers and assistants in civil service and local government; hairdressers/barbers /beauticians; educational assistants; prof. athletes and sports officials; fire service officers; security guards; cashiers and bank clerks, telephone operators/salespersons, auctioneers, secretaries, personal assistants, receptionists; farm manager/owners (50-99 acres).*

4 Skilled manual. e.g. *Builders, bricklayers, painters/decorators; electricians; plumbers; welders; motor mechanics; bakers, butchers, fishmongers, chefs, cooks; Bus/taxi drivers, conductors and inspectors; farm manager/owner (30-49 acres).*

5 Semi skilled. e.g. *Tilers, roofers, glaziers; horticultural trades; waiters, bar staff; prison service officers; assemblers and line workers; packers, bottlers; seafarers; fishing and related workers; forestry and related workers; postal workers; porters; care assistants and attendants; cleaners; farm manager/owner (0-29 acres).*

6 Unskilled. E.g. *farm workers; window cleaners; car park attendants.*

7 All others gainfully employed and unknown.

PLEASE NOTE:

- For those who are retired, their previous occupation should be used.
- For those who are not working, e.g. a student or person working at home caring for children or other relations, the occupation of the main income earner in the household should be used.
- For anyone who is unemployed, use their previous occupation.

Pregnant Yes/No

TOBACCO CONSUMPTION AND DEPENDENCE

- Daily consumption of cigarettes is to be recorded as the number of cigarettes per day.
- If a patient smokes roll-up cigarettes, record the number of this type of cigarette smoked per day in the next column.
- If a patient uses snuff or snus, please record it as 'Y' for 'Yes' in this column.

- **Fagerstrom Score** used to measure dependence level, with 3 options as answers.

FAGERSTROM SCORE – Questions	Answers	Points
How soon after you wake do you smoke your first cigarette?	Within 5 minutes	3
	6 - 30 minutes	2
Do you find it difficult to refrain from smoking in places where it is forbidden?	Yes	1
	No	0
Which cigarette would you most hate to give up?	The first of the day	1
	All others	0
How many cigarettes per day do you smoke?	10 or less	0
	11 to 20	1
	21 to 30	2
	31 or more	3
Do you smoke more frequently during the first hours after waking than during the rest of the day?	Yes	1
	No	0
Do you smoke if you are so ill that you are in bed most of the day?	Yes	1
	No	0

Score:

0-3 Low Addiction

4-5 Medium Addiction

6-10 High Addiction

NUMBER OF OTHERS WHO SMOKE IN THE HOUSEHOLD

Whether a smoker lives with other people who smoke no doubt influences their efforts to quit. For this reason we have decided to record the number of other smokers in the

household. If a smoker lives with no other smokers, insert '0' in this column. If the patient lives with one or more smokers, please insert the number of other smokers here.

PAST HISTORY RE QUITTING.

Has patient used this service before? Has the patient used your cessation service in the past? Please answer Yes/No.

Previous quit attempts- This is the total number of previous quit attempts. Please choose one of the options listed as a response.

Method used on last quit attempt- Please record the type of support that the patient used in their *most recent* quit attempt.

Options listed include:

- Cessation programme (i.e. any cessation service/support programme)
- Cessation programme (CP) plus nicotine replacement therapy (NRT)
- CP plus Zyban
- CP plus Champix
- NRT only (i.e. without behavioural support programme)
- Self motivation (i.e. cold turkey)
- Zyban only
- Champix only
- Quit line – support from National Smokers helpline
- Alternative therapies (acupuncture, hypnotherapy, laser therapy etc)
- Self-help materials (e.g. booklet they may have picked up in a pharmacy/health centre)

CURRENT QUIT ATTEMPT

Referred by lists a number of referral sources. Referral source would not provide enough information on the type of patient, e.g. it would not highlight that a patient was a HSE staff member, or it would not show us which patients were in-patients.

Patient Status allows this type of patient to be recorded. The options are:

- Inpatient
- Outpatient
- Day Patient
- Public/Community – members of the public or local community. This may also include members of a workplace who have enrolled in a support programme.
- Staff members
- Mental Health – *patients who have mental health problems. Although we have included a referral source of ‘Mental Health services’, it is acknowledged that a number of such patients would actually self-refer and so their condition would not be recorded under referral source. Hence, as they are a priority group for cessation support it was deemed appropriate to have a category in this field by which this could be recorded.*

Primary Reason for Quitting

9 reasons are listed in this field. Please record the patient’s main reason for quitting on the current quit attempt.

GMS

There are 2 types of medical card in existence in Ireland. The original ‘Medical Card’ and the ‘GP Only Card’. In contrast to those with a GP Only Card, people with a Medical Card are entitled to free prescriptions. This would include prescriptions for pharmaceutical aids

that are used to treat tobacco dependence (i.e. NRT, Zyban and Champix). Data on Medical Card status is required in order to find out if the patient is entitled to such prescriptions. **If a patient has a GP Only Card, then the response under the GMS heading should be ‘No’.**

Main Type of Support Provided

This refers to the main type of support provided on the patient’s current quit attempt. The three main types of support are one-to-one, group and telephone but we have also differentiated between settings such as hospital and community. Hence the options to choose from are:

- | | |
|-----------------------|------------------|
| -Hospital One-to-one | -Hospital Group |
| -Community One-to-one | -Community Group |
| -Telephone | -Online |
| -Other | |

NUMBER OF CONTACTS

No. of Interventions less than 15 minutes long – this is the total no. of interventions that took place with the patient, during the study period, that lasted 15 minutes or less. These interventions can be face-to-face with a patient, or support delivered over the phone;

No. of Interventions longer than 15 minutes - this is the total no. of interventions that took place with the patient, during the study period, that lasted more than 15 minutes. These interventions can be face-to-face with a patient, or where a patient has attended group support, or support delivered over the phone;

Administration Contacts - this includes all the following type of contacts with patients:

- Phone calls re appointments, or calls re follow-up monitoring

-Text messages re appointments or follow-up

-Emails sent

-Letters posted

The number of occasions that attempts were made to contact a patient can be documented as part of this figure.

PLEASE NOTE:

FOR THOSE PATIENTS WHO DO NOT SET A QUIT DATE:

- The number of interventions and number of admin. contacts with them should still be recorded. This then completes their data set as all other columns following Administration Contacts relate to Quit Dates and follow-up reviews.

- The Service Satisfaction Questionnaire should be given to all patients regardless of whether they set a quit date or not. A copy of the Questionnaire, covering letter and stamped addressed envelope should be given to each patient on their last visit, or their last review.

- In relation to hospital patients who are seen once or twice during their hospital stay, and who do not set a quit date or plan to return to you for an appointment, they should be given the Satisfaction Questionnaire before they leave the hospital or it can be posted out to them within a few days of their discharge.

- A Satisfaction Questionnaire, cover letter and envelope should be posted out to all patients who do not receive them in person.

- Be sure to affix the ID code label provided to the questionnaire before giving it to the patient. This ID code should match that entered into the data tool.

QUIT DATE

Quit Date is the actual date on which the patient quits and should be denoted as DD/MM/YYYY. **Patients who set repeated “quit dates” should only be included in the monitoring once during the period of this study, with the outcome of the latest attempt.**

In the section below on Monitoring, we have detailed the Russell Standard from the UK, which has been adopted as guidance for monitoring. It specifies times during which follow-up reviews should take place. To save you time, we have programmed the data tool to automatically generate dates indicating the start and end of the 4 week and 3 month follow up periods according to the Russell Standard once a quit date has been entered.

The two columns next to the Quit Date are entitled ‘**Start of 4 week follow-up period**’ and ‘**End of 4 week follow-up period**’. You will see that there are already dates in these columns (e.g. 25/01/1900 and 04/02/1900). Please ignore these but **do not delete them**, as they will automatically change to a date in 2008 once you enter a quit date.

Once a quit date has been entered in the relevant column for a patient, two new dates will appear showing you the time period during which you must carry out the 4 week review or follow-up. For example, if a patient quits on Jan 1st, and you enter 01/01/2008 as their quit date, the dates that will automatically appear in the next 2 columns are 26/01/2008 and 05/02/2008. This means that you can plan to review the patient anytime between Jan. 26th and Feb. 5th.

The data tool has also been programmed to show you their 3 month follow-up time period. We acknowledge that it is only those patients still quit at 4 weeks that are to be followed up at 3 months, but the data tool will give you these dates whether you need them or not. For example, when you enter a quit date for a patient quits on 01/01/2008, you will see that the dates that appear in the column for 3 month follow-up are 17/03/2008 and 14/04/2008, i.e. if the patient is still quit at 4 weeks, you then review them again anytime between March 17th and April 14th.

Method used

This aims to gather information on the use of any pharmaceutical aids on the current quit attempt. All patients who set a quit date and receive the relevant aid(s) should be included. Clearly the expectation is that the vast majority will use the aid as directed, but this means, for example, that a patient who begins a course of Zyban but discontinues it (perhaps due to side effects) should be included.

‘Cessation Programme and Combination therapy’ refers to patients who are being treated with nicotine replacement therapy in addition to either Zyban or Champix.

FOLLOW-UP MONITORING

(A) 4 Week Follow-Up

Those patients who set a quit date must be followed up 4 weeks after the quit date, unless the patient requested that no follow-up contact be made. If this is the case, this request can be documented at this follow-up point (‘Patient requested No Follow-up’ is included as a possible response on the database).

The person who provided the initial intervention should, wherever possible, carry out the 4-week follow-up.

Contacting patients for the 4 week follow-up

The Russell Standard (UK) has been adopted as guidance for reviews/follow-ups. Using this as guidance for the 4 week review, the following applies:

For patients who have given permission to have a review or be contacted for follow-up, the total time within which the 4 week review/follow-up must be completed is between 3 days before and 7 days after 4 weeks post the quit date. Up to 3 attempts can be made to reach the patient; any patient not reached after 3 attempts should be denoted as 'Could not Contact'. Patients should either be seen preferably in person or contacted by telephone for follow-up.

If telephone contact is not feasible for any reason a letter should be sent. Any patient not replying to the letter should be counted as 'Could not Contact'.

Completing the 4 week follow-up

Definition of "Quit at 4 weeks"

According to the Russell Standard, a patient is counted as a 'self-reported 4 week quitter' if they have been assessed (face to face, by postal questionnaire or by telephone) 4 weeks after their quit date (minus 3 days or plus 7 days) and declares that he/she has not smoked a single puff on a cigarette in the past 2 weeks.

Codes available at the 4 week follow-up include:

'Y' = Yes, patient still quit

'N' = No, patient has relapsed

'Could not Contact'

‘Patient RIP’

‘Patient requested No Follow-up’

Carbon Monoxide (CO) validation

CO validation should be attempted on all patients who have said they are quit at their 4 week follow-up/review (i.e. all those who have a ‘Yes’ in the previous column). CO monitoring of patients at the 4 week follow-up stage is considered to be good practice, as it is motivational for patients as well as a validation of their smoking status.

Codes available under ‘CO validation’ include:

‘CO (CO \leq 6ppm)’ – if a patient has undergone CO validation of their quit status, and their CO reading is 6ppm or less, they are deemed still quit and this code should be recorded

‘Self (quit status self reported)’ – if the quit status is only self report. This may happen if the patient is not willing to return for a review, or if they refuse to undergo a CO test, or if the follow-up takes place over the phone.

‘Fail (CO \geq 7ppm)’ - if a patient has undergone CO validation of their quit status, and their CO reading is over 7ppm, they are deemed to be not quit and this code should be recorded.

Service providers will need to ensure the regular calibration and maintenance of CO monitors, in accordance with manufacturers’ instructions, in order to provide accurate and consistent CO monitoring and validation.

Patients who have relapsed

It is for cessation advisers to determine whether to encourage a patient who has failed to quit, but wishes to try again, to set a further quit date immediately. Patients who set repeated “quit dates” should only be included in the monitoring once during the period of this study, with the outcome of the latest attempt.

(B) 3 month follow-up

Only patients who have successfully quit at 4 weeks should be followed up at 3 months. As already explained, the data tool is going to automatically show you the time period for 3 month reviews but this should only be used as guidance for those patients who were still quit at 4 weeks.

Using the Russell Standard as guidance for the 3 month review, the following applies:

For patients who have given permission to have a review or be contacted for follow-up, the total time within which the 3 month review/follow-up must be completed is during the period 2 weeks either side of their follow up date, i.e. there is a 4 week period during which patient can be contacted for follow-up;

Procedure

The same procedures for contacting a patient and undertaking CO validation should be followed as for the 4 week follow-up.

Quit Status

A patient is counted as a 'self-reported 3 month quitter' if they have been assessed (face to face, by postal questionnaire or by telephone) 3 months after their quit date (minus 14 days or plus 14 days) and declares that he/she **has not smoked more than 5 cigarettes in the past 10 weeks.**

Codes available at the 3 month follow-up include:

'Y' = Yes, patient still quit

'N' = No, patient has relapsed

'Could not Contact'

'Patient RIP'

‘Patient requested No Follow-up’

Carbon Monoxide (CO) validation

CO validation should be attempted on all patients who have said they are quit at their 3 month follow-up/review (i.e. all those who have a ‘Yes’ in the previous column).

Codes available under ‘CO validation’ include:

‘CO (CO \leq 6ppm)’ – if a patient has undergone CO validation of their quit status, and their CO reading is 6ppm or less, they are deemed still quit and this code should be recorded

‘Self (quit status self reported)’ – if the quit status is only self report. This may happen if the patient is not willing to return for a review, or if they refuse to undergo a CO test, or if the follow-up takes place over the phone.

‘Fail (CO \geq 7ppm)’ – if a patient has undergone CO validation of their quit status, and their CO reading is over 7ppm, they are deemed to be not quit and this code should be recorded.

OPTION TO INCLUDE A COMMENTARY/SHORT REPORT

In the UK, cessation service coordinators are encouraged to complete and return ‘Quarterly Commentaries’ with their ‘returns’ from the NHS cessation services. The Commentaries are used to record key points arising from the monitoring (e.g. if unexpected problems have arisen within the service, or how the service development at the end of the quarter fits with the overall plans for the service etc.).

As part of this study, we have decided that when data tools are being returned, we will provide an option of completing a short commentary to accompany data. Providers may feel it important to record a comment relating to the data collection, e.g. to explain a break in the service where no data was entered (if a provider was on leave for a period of time).

TFRI will remind providers in advance of the end of the study that they can include a short commentary when they submit their data tool.

Any queries should be addressed to:

Sheila Keogan

01 4893637

skeogan@tri.ie

Laura Currie

01 4893624

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Paula Campbell

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paula.campbell@maile.hse.ie (Thursday and Friday only)

Appendix 4

Patient satisfaction questionnaire

SMOKING CESSATION SERVICE SATISFACTION QUESTIONNAIRE

WHAT WE'RE ASKING YOU TO DO –

- Please try to answer every question as best as you can.
- You can answer most questions by circling the relevant letter/number or by writing in a word or phrase.
- Never circle more than one answer **unless the instructions say 'mark all that apply'**.
- Please do not consult with fellow workers, friends or relatives before completing the questionnaire. We want your answers based on your own experience.
- Please do NOT write your name anywhere on the questionnaire. Your answers are strictly confidential and your service provider will not see them.

THANK YOU VERY MUCH FOR YOUR COOPERATION.

1. If you were to attend a service to help you quit smoking, what day of the week would you prefer to attend?

- A. Weekends
- B. Weekdays

2. At what time of day would you prefer to attend a smoking cessation support service?

- A. Mornings
- B. Afternoons
- C. Evenings

3. How long did you have to wait for your first smoking cessation support appointment after contacting the service or being referred?

- A. Less than 1 week
- B. 1 to 2 weeks
- C. 2 – 4 weeks
- D. More than 4 weeks
- E. Don't know

4. What form of support do you feel would be most helpful in supporting your quit attempt? **Mark all that apply.**

- A. Group Support
- B. Individual Support (one on one)
- C. Telephone Support
- D. Online Support
- E. Other **(Please specify)**

Please rate the extent to which you agree with each of the following statements. Circle the appropriate number on the scale from 1 to 5

Q No	Statements	Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
	The location of the service was convenient for me.	1	2	3	4	5
	The time of day that the service was provided suited me.	1	2	3	4	5
	The day of week the service was provided suited me.	1	2	3	4	5
	The venue in which the service was provided was suitable.	1	2	3	4	5
	The smoking cessation support provided met my expectations.	1	2	3	4	5
	I would feel confident recommending this service to friends and family.	1	2	3	4	5
	The staff that provided the support service seemed well trained to do so.	1	2	3	4	5
	The staff providing the service explained information clearly.	1	2	3	4	5
	The staff providing the service listened to and understood my concerns.	1	2	3	4	5
	Overall I am very satisfied with the support I have received at this service.	1	2	3	4	5

Q No	Statements	Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
15	The time I had to wait between first contacting the service and receiving my first appointment was reasonable.	1	2	3	4	5
16	I was given all the information I required to support my quit attempt.	1	2	3	4	5
17	I felt free to ask my service provider questions at any time.	1	2	3	4	5
18	The information I received was helpful in my attempt to quit smoking.	1	2	3	4	5
19	The support given to me made me feel more motivated and confident to make my quit attempt.	1	2	3	4	5
20	The length of support session(s) was long enough.	1	2	3	4	5
21	The number of support sessions was suitable.	1	2	3	4	5
22	The staff providing the service was supportive and caring.	1	2	3	4	5

23. Would you access this service again in the future if you needed further support to quit smoking?

A. Yes

B. No

If you answered no, please explain why you would not access this service again.

24. Please provide one way that this cessation service can improve support for smokers.

25. If you were prescribed nicotine replacement therapy (eg patches, gum etc.) or medications (eg Zyban or Champix) to help you stop smoking, did you have to pay for them?

A. Yes

B. No

C. I was not prescribed medications.

If Yes, did this limit your participation in the cessation programme?

A. Yes

B. No

26. What is your gender?

A. Male

B. Female

27. What is your date of birth:

Date _____ Month _____ Year _____

Thank you very much for taking the time to complete this questionnaire your comments will help us to improve services in Ireland. Please use the stamped addressed envelope to return the questionnaire.

Appendix 5

Ethical approval

Ursula Ryan FH 4142342 email Ursulayarn@amanch.ie
Secretariat Fax 4142371

TAILAGHT, DUBUN 24, IRELAND
TELEPHONE +353 1 4142000

Professor Luke Clancy
RIFTFS
The Digital Depot
Thomas Street
Dublin 8

June 7th 2006

Re: Smoking Cessation Services in Ireland -An evaluation of services available and their effectiveness

- Please quote' this reference in any follow up to this letter: 2006 06 02 Chairman's Action'

Dear Professor Clancy,

Thank you for your recent submission of the above study to the SJH/AMNCH Joint Research Ethics Committee. The Vice-Chairman, on behalf of the Committee, has reviewed your study and given his approval for it to commence. The following documents have been reviewed:

- Administrative Application
- Confidential Research Protocol
- Information Sheet & Consent Form

Yours sincerely,



Daniel R. Lynch

Secretary,

SJH/AMNCH Research Ethics Committee

List of Publications

Related to this thesis:

- **Findings on Pregnant smokers attending smoking cessation services in Ireland** S. Keogan, Z Kabir, V Clarke, L Clancy. ITS Annual conference Limerick 2012
Submitted
- **The development of a database to aid the assessment and scheduling of smoking cessation programmes.** WCTOH March 2012. S. Keogan, Z. Kabir , L. Currie , V. Clarke , L. Clancy.
- **Prevalence and predictors of smoking cessation rates in Ireland: A follow-up cross-sectional study.** ERJ Sept 2011 Keogan S, Kabir Z, Currie L, Gunning M, Campbell P, Clancy L.
- **An evaluation of the range and availability of intensive smoking-cessation services in Ireland.** Irish Journal Med Science. 2010 Jun; 179(2):225-31. Currie L, Keogan S, Campbell P, Gunning M, Kabir Z, Clancy L.
- **Prevalence & Predictors of Smoking cessation rates in Ireland: a follow-up cross sectional study.** Irish Journal Med Science. 2010 Vol 179 Supp 12S495 10.8. S. Keogan, Z. Kabir, L. Currie. M. Gunning, P. Campbell, L. Clancy
- **Smoking Cessation Services in Ireland: Patient's satisfaction questionnaire survey.** Irish Journal Med Science 2009. S. Keogan, L. Currie, Z. Kabir, V. Clarke, L. Clancy

- **The range and availability of smoking cessation services in Ireland.**

The International Journal of Tuberculosis and Lung Disease

Vol 12 No;11 2008. L. Currie, S. Keogan, P. Campbell, M. Gunning, Z. Kabir, V. Clarke and L. Clancy.

- **Prevalence & Predictors of Smoking cessation rates in Ireland: a follow-up cross sectional study**

Ir J

Med Science 2010 Vol 179 Supp 12S495 10.8. S. Keogan, Z. Kabir, L. Currie. M. Gunning, P. Campbell, L. Clancy

Other Publications:

- **Best Practice Guidelines for Tobacco Management in the Mental health Setting, February 2008**

http://www.hse.ie/eng/services/Publications/services/Mentalhealth/Tobacco_Managenent_in_the_Mental_Health_Setting_-_Feb_2008.html accessed August 2012

- **Second hand smoke exposure in cars and respiratory health effects in children**

ERJ Express. Published on April 8, 2009 as doi: 10.1183/09031936.00167608 Zubair

Kabir, Patrick J Manning, Jean Holohan, Sheila Keogan, Patrick G Goodman, Luke Clancy

- **Smoking characteristics of Polish immigrants in Dublin**

BMC Public Health 2008, 8:428 (31 Dec 2008) Zubair Kabir, Vanessa Clarke, Sheila

Keogan, Laura M Currie, Witold Zatonski and Luke Clancy

- **Prevalence of smoking in cars in Ireland: cross-sectional surveys**

Irish Journal of Medical Science. Vol 177. Supp 13. pg S446 Nov 2008 Kabir Z, Keogan S, Manning PJ, Holohan J, 1Goodman PG, Clancy L

- **Smoking profile of the Gay and Lesbian Community in Ireland**

Irish Journal of Medical Science.

Vol 177.Supp 13. pgS446 Nov 2008 Keogan S, Clancy L, Clarke V, Currie L, Kabir Z

- **Prevalence and effects of active and passive smoking exposure on bronchitic symptoms in Irish school children**

The International Journal of Tuberculosis and Lung Disease

Vol 12 No;11 2008 Luke Clancy, Patrick Manning, Jean Holohan, Sheila Keogan, Patrick Goodman, Zubair Kabir

- **Asthma and symptoms of wheeze, hay fever and bronchitis among Irish school children exposed to second-hand-smoke in cars**

The International Journal of Tuberculosis and Lung Disease

Vol 12 No;11 2008 Zubair Kabir, Patrick Manning, Jean Holohan, Sheila Keogan, Patrick Goodman, Luke Clancy

- **Smoking characteristics of Polish immigrants in Dublin**

European Respiratory Society Vol 32 Supp 52 p3880 2008 Vanessa Clarke, Zubair Kabir, Sheila Keogan, Laura Currie, Witold Zatonski & Luke Clancy

- **Smoking and bronchitis symptoms among Irish school children: an ISAAC protocol study, 1995-2007**

European Respiratory Society Vol 32 Supp 52 (3154)2008 Luke Clancy, Patrick Manning, Jean Holohan, Sheila Keogan, Patrick Goodman, Zubair Kabir.